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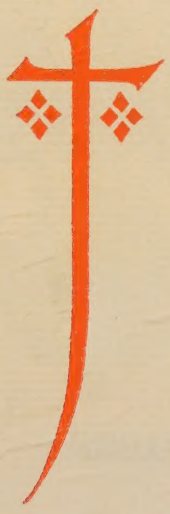
HETCH HETCHY

Mt. Lyell, 13,090 feet—whose living glaciers supply water for both San Francisco and Los Angeles. The Tuolumne and Owens Rivers rise fifteen miles apart on opposite sides of this snow-capped peak.

HETCH HETCHY

THE STORY OF SAN FRANCISCO'S
STRUGGLE TO PROVIDE A WATER
SUPPLY FOR HER FUTURE NEEDS

BY
RAY W. TAYLOR



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DEDICATED

TO THE

PARTNER OF MY FORTUNES

upon whom these chapters were tried for comment and
criticism which resulted in clarifying many
obscurities that had unconsciously
crept into the work

INTRODUCTORY

PERCHANCE SOME WILL SAY IT IS A far cry from prehistoric San Francisco to the present Hetch Hetchy project. Where to begin was one of the first questions that arose in undertaking to write this story. It would have been simple enough to have started with the Phelan water filings in 1900. The curious, however, would like to know who discovered the Hetch Hetchy, its why and wherefore; how the City of San Francisco became obsessed by the desire to possess it.

Once this realm of investigation was opened it led back to the first mention of the Hetch Hetchy Valley and Tuolumne River as a possible water supply in the year 1882. By this time the subject became involved in the long drawn out controversy that had existed between the municipality and the Spring Valley Water Works, later the Spring Valley Water Company.

It seemed desirable, therefore, briefly to sketch in the events leading up to this point in order to put the reader in possession of the genesis of the entire municipal ownership idea, which was a growth. It did not spring forth full blown as the result of any preconceived notions of what functions properly belonged to municipal government. This in turn brought in more or less of the history of the city itself and its physical position on the tip of a peninsula. So it was determined to begin at the beginning of the beginning.

More has been written about the Hetch Hetchy than any other subject

connected with the city's history. Controversies started over its selection, its desirability, its cost. Possibly no subject before a municipality ever was dissected and investigated so thoroughly as the city's water supply. The reports are voluminous. The hearings at Washington fill volumes of the Congressional Records to say nothing of the committee hearings and discussions in which the entire nation joined.

Obviously to have followed the ramifications of all of the arguments that developed over a space of a quarter of a century since this project was started would have taken up far more space than contemplated in such a volume as this. In fact, it would seem hardly desirable. To the average reader a connected account, with such illuminating side-lights as would assist him in grasping the underlying reasons for decisions made and action taken, would seem to be all that is necessary.

With this in mind many of the side issues, newspaper controversies, personal differences have not been included. The broad sweep of events has been followed from the beginning to end. Many of the questions that seemed all-important at the time, later developed to be more imaginary than real.

RAY W. TAYLOR.

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HETCH HETCHY

Prehistoric valley of San Francisco. Indian legends and geologists say that a subsidence of the earth allowed the ocean to roll in through a gorge in the hills and submerge the valley. The same seismic disturbance diverted the Russian and San Benito Rivers into their present channels.

PLATE I.

PREHISTORIC SAN FRANCISCO

RECENTLY ENOUGH TO BE RECALLED by native legends, the Indian chased his game and plucked the wild fruits in a pleasant valley that is now a mighty bay. In late geologic times there came a convulsion of nature. The ocean flowed in. The topography was changed. The western mountain range became a peninsula. At its tip, after the lapse of countless centuries, grew the City of San Francisco, surrounded by salt water. Its people wanted plenty of water for drink and power. The need of the Hetch Hetchy reservoir was determined in the days when mankind was young.

Try to imagine, if you can, the Sacramento River running out to the ocean through a narrow gorge in the hills where the Golden Gate now is; the Russian River from the north joining it at San Pablo Bay, and the San Benito River from the south flowing past Goat Island and joining the combined rivers about opposite the Marina; fresh water would have been at San Francisco's doors, the Bay of San Francisco a fertile valley 260 miles in length, extending from the beginning of the Russian River in the north to the Santa Clara Valley in the south.

This is the picture geologists draw for us and oddly enough man's mind runs back to such a time, if Indian lore gleaned by the early Spaniards is of any account. Legendary though they be, the stories curiously enough parallel the geologists' deductions.

Professor Joseph LeConte in an article suggested that the San Joaquin and Sacramento Rivers, instead of flowing west through the Golden Gate, after junction with the Russian River, turned south, flowed through the Pajaro canyon and thence into Monterey Bay.* In this, however, he is in disagreement with other scientists. The Indian legend agrees with him. The story is that they could go from San Francisco to Marin dryshod.

Green fields and meadow lands, trees and shrubs diversified the valley of San Francisco. Then a settlement of the earth's crust changed this sylvan scene into a waste of water. It influenced the destiny and character of a great city, yet to be built. Hetch Hetchy became a necessity.

For the sake of its graphic descriptions the Indian legend of the cataclysm is recounted:

> "The Indians say that many moons ago their tribe was rich and powerful, they built large cities and tilled the land. In those days all the great valleys of the Sacramento, San Joaquin and Santa Clara were one; they had no outlet where it now is at San Francisco. But the waters rushed into the sea near Monterey through where the Pajaro River runs.
>
> But when the people were great and powerful, the mountains melted and burned up and in the flames the people were most all destroyed. While the mountains continued to burn, the earth shook and great hills fell down and the waters rushed over them into the sea where they do now at San Francisco."†

The same story in a different form, as told by Frank Soule is:

> "We may observe here, that there is a tradition among the Indians of California, that San Francisco Bay originally formed a fresh water lake. An earthquake, however, suddenly opened the line of mountains along the coast, when the sea rushed in and changed the region to what it now is. The surplus fresh waters

*8 Bulletin, Geological Society, Vol. 2, 1891, p. 326.

†Stories of Stanislaus, by Sol P. Elias, p. 202.

> of the old lake were supposed to have been discharged into Monterey Bay, by a great river flowing through the valley of San Jose and Santa Clara. This river was believed to have passed near the Mission San Juan and fall into the present stream of the Pajaro."*

In the language of the scientist what happened, as described by Professor Andrew C. Lawson, was:

> "The most interesting to Californians because of its recency is the subsidence, to the extent at least of 378 feet, of the coast at the mouth of the Sacramento River flooding the lower portions of the valley giving us the magnificent harbor at San Francisco and making of a river gorge the far famed Golden Gate."†

One can readily imagine, with Lassen's recent activity, a seismic disturbance accompanied by volcanic eruptions setting fire to the forests. If the Indian story is to be accounted for, this was followed by a subsidence of the earth's surface which lowered the fair valley of San Francisco to such an extent that the ocean rolled in through the cut made in the hills by the three rivers.

This seismic disturbance evidently tilted the earth sufficiently to divert the Russian River through its present canyon to the west. At the same time the San Benito River made a new channel oceanward. In this connection Professor Lawson says:

> " The Russian River—This stream once clearly flowed down through Petaluma Valley to the main drainage outlet at the Golden Gate. A low divide in the middle of the old valley now causes the drainage to flow westward at right angles to its former southerly course, and seeks the coast by the present transverse route."†

Professor LeConte, in discussing changes on the Atlantic and Pacific Coasts, calls attention to the deep channels found in the bed of the ocean opposite where rivers empty. But there is no such channel, he says, opposite the Golden Gate.

*Annals of San Francisco by Soule.
†Prof. Lawson, Geol. Bull. No. 1, U. C., p. 269.

The explanation of these deep channels, he says, is that before the subsidence of the coast these rivers were cutting their way through the earth's surface oceanward. When the subsidence occurred the cutting ceased, but the old river beds are there, mute testimony of former conditions.

Regarding San Francisco Bay he tells us:

> "At the present time the tributaries of the Sacramento and San Joaquin Rivers pour their united waters into San Francisco Bay and through the Golden Gate into the Pacific. But this outlet certainly did not exist in Pliocene times, for there is no submarine channel off the Golden Gate.
>
> Where, then, did the river empty at that time?
>
> Probably far southward into the Pacific Ocean, off the Bay of Monterey.
>
> Professor Davidson tells me that a depression of 100 feet at the divide between the bays of San Francisco and Monterey would now empty the waters of the former into the latter. Is it not possible, then, that the deep channel running in close to shore in Monterey Bay may be the submarine Pliocene outlet of this great river? If so, then the history of this river may be as follows:
>
> The waters of the united Sacramento and San Joaquin Rivers at that time flowed through the region now occupied by the Bay, then through the valley continuations of the same southward and into the Pacific by the submarine channel of Monterey Bay.
>
> About the beginning of the Quarternary (age of man), the oroganic changes which submerged its lower course cut off also its mouth and opened another through the Golden Gate."*

Viewing the Bay from the sides of Grizzly Peak in Berkeley, Professor Lawson says it becomes quite apparent and plainly discernable that Goat Island is the top of a small hill, Angel Island another one, and that the subsidence caused the water to surround them.

*Atlantic and Pacific Coast Changes, p. 326.

Tomales Bay and Bodega and other bays were also results of the same subsidence as that which made a bay of the San Francisco valley.

In this same strain Irving B. Richman says:

> "According to physiologists the Golden Gate originally was the outlet for the combined waters of the Sacramento and San Joaquin Rivers. By a subsidence of the bed of these streams, the sea was admitted through the Golden Gate, thus forming the San Francisco Bay."*

The formation of the Bay of San Francisco also made the peninsula of San Francisco. It cut off the city's present location from any connection with the north. Every attempt to bring water from the streams to the north has been confronted with the problem of crossing the deep channel across the Golden Gate. It has resulted in all efforts to bring water into the city being made from around the southern end of San Francisco Bay.

Where Lake Merced is, a valley once emptied into the ocean. The outlet has been dammed up, forming the lakes. But the geologists state with a little more depression of the earth's crust the Pacific could have rolled into San Francisco Bay from this inlet as well as the mouth of the Sacramento, thus making a second water way into the Bay where the Fleishhacker playfield is located.

The following incident of quite recent date regarding these lakes is told by early Californians:

> "November 23, 1852: The waters of Lake La Merced, in the vicinity of the city, which cover several hundred acres, sank about thirty feet. Shortly before midnight of this day, a shock like that of an earthquake was felt by parties residing near the place; and the following morning it was discovered that a great channel between the lake and the sea had been opened, during the night, through a broad and high sand bank, by which the waters had found a way and been discharged.

*Calif. under Mexico, by Richman, p. 307.

> It was supposed by some, either that the bed of the lake had been suddenly uplifted, by volcanic action, whereby the raised waters scooped through the yielding bank of the channel mentioned, and that afterwards the bed of the lake had fallen to its former level, or else that a great sinking of the bank itself had taken place (supposed to have been produced by subterranean causes) owing to which depression, the water had been drawn off to the extent mentioned."

Regarding the age of man on this coast, Harold S. Gladwin, honorary curator of the Santa Barbara museum of natural history, and D. B. Rogers, lately of the Smithsonian Institute, in line with D. B. Harrington of the Smithsonian Institute in an interview published in the "San Francisco Chronicle," February 6, 1925, gave it as their belief that the original inhabitants came from Asia. Then appears the following:

> "The coast land of Santa Barbara is, in fact, chuck-a-block with Indian burial grounds, filled with bones and implements of thousands of early inhabitants. Some of them are as recent as the landing of the Spaniards in 1542, while others hark back to the timeless centuries when both Americas were manless, nameless, wildernesses."

Plate II.

IN THE BEGINNING

CITIES GROW VERY MUCH LIKE other living organisms in the animal and vegetable kingdoms. Their beginnings are insignificant and inauspicious. Their needs must be easily and readily obtainable else they could not survive infancy. They burrow into the ground for water. Their food comes from near by sources. Then as they grow they reach out, until every corner of the globe finally contributes to their pleasures and necessities.

The straggling village of Yerba Buena located on the northermost point of the peninsula—in January, 1847, changed to San Francisco—was the tiny seed from which the great metropolis of the west sprang. Ground in those early days was given away to those who would build a habitation of any sort and live there.

Water was obtainable from shallow wells and springs. Little thought was given then to the tremendous problem and difficulties that would ultimately develop in order to supply a city located on a peninsula with this necessity.

The general fecundity of the early Spanish families was laid to a famous spring in the Presidio. Zoeth S. Eldridge says:

> "Within the Presidio reservation of San Francisco is a spring called El Polin to whose marvelous virtues were attributed the large families of the garrisons. Its existence and peculiar qualities

were known to the Indians from a remote period and its fame was spread throughout California."*

And in a quotation from General M. G. Vallejo is the following about the spring:

"It gave very good water, and experience afterwards demonstrated that it was excellent and of miraculous qualities. In proof of my assertions I appeal to the families of Miramontes, Martinez, Sanchez, Soto, Briones and others, all of whom several times had twins. Public opinion, not without reason, attributed these salutary effects to the virtues of the water of El Polin, which still exists."†

By 1849 the water problem had already reached the stage where the price of it was $1 the bucketful. The gold rush was on. Anita Day Hubbard says:

"The direct ancestor of the Hetch-Hetchy System was a donkey. The elaborate system of dams and watersheds, and miles and miles of tunnels and pipes which will eventually supply San Francisco with water, were first started on the way to existence by a humble burro, that carried two barrels, one on either side, from which the liquid was doled out to purchasers via the homely uses of a bucket.

The chaperone of the donkey water system was Juan Miguel Aguirre. His supply was first obtained from the Presidio and later from Mountain Lake, and later he utilized a clear natural spring on Washington street near Montgomery. Public utilities paid in even those remote days. Senor Aguirre used to make as much as $30 a day, though he charged only $1 a bucket."‡

San Francisco's first Legislative Assembly met on Monday evening, March 12, 1849. This body was called afterwards for many years the Ayuntamiento or Town Council. It was the need of organization to look out for

*Beginnings of San Francisco, p. 188.

†Discurso Historic, San Francisco Centenary, October 8, 1876, MS. Academy of Pacific Coast History (Bancroft Collection).

‡Bulletin, Dec. 6, 1924.

the requirements of the growing community that called it into being. Ten years later, however, water still was scarce.

Fire Chief F. E. R. Whitney, writing to the council says:

> "I must again earnestly call your attention to the want of water in the different fire houses, except as it is procured at the expense of each company respectively. The city can certainly afford a cup of water to drink, and a basin of the same for those who return to their engine houses after a fire or alarm, wearied and soiled by their toil and exertion in the city's behalf."*

David Scannell in his report for 1865 says:

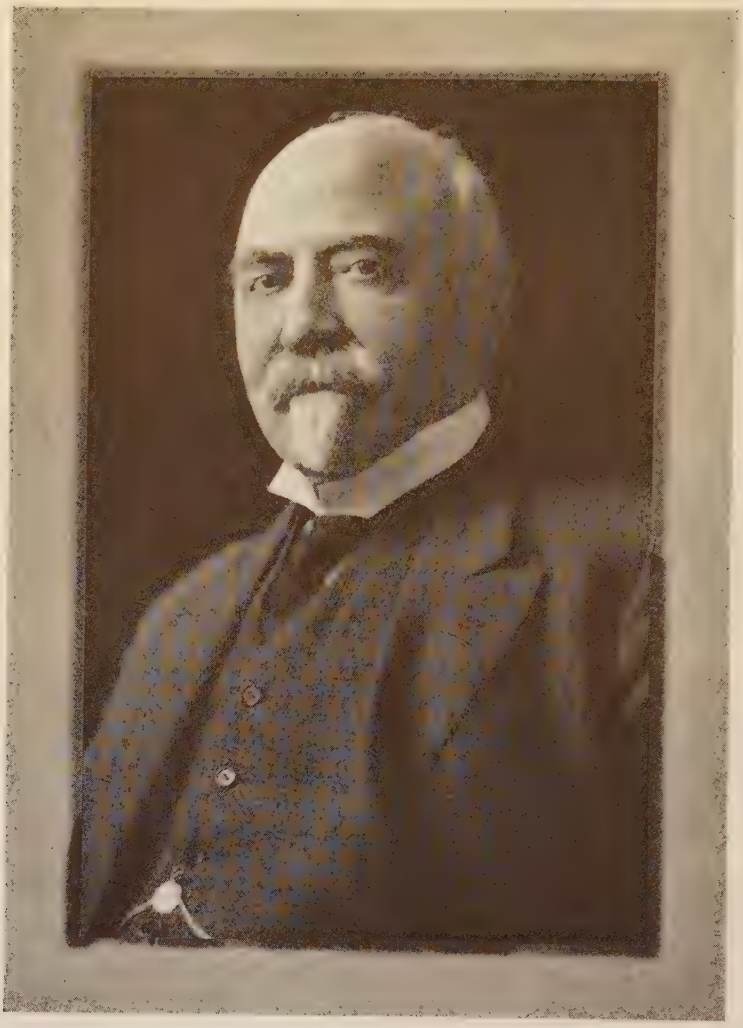
> "A scant supply of water in the hydrants was again experienced at this fire. Had not the tide in the bay been favorable at the time, a more serious loss might have occurred."

In the year 1865, Justice Field of the United States Circuit Court wrote the decision which confirmed to the Pueblo of San Francisco four square leagues of land, to which all Pueblos were entitled under the laws, usages and customs of Mexico.

It was out of this patrimony, inherited from the Mexican government, that Golden Gate Park was carved. Finally in 1868 the Main Park, as it was called, was surveyed by Wm. Ham. Hall. It was said to contain 1049 acres and was valued at that time at $801,593.†

By this time San Francisco had begun to take on some of the desires and aspirations of a metropolis. An abundance of water was its greatest need.

*Municipal Reports, 1859–60, p. 117.
†Municipal Reports, 1868, p. 569.



Hermann Schussler III.

AWAKENING

HUSTLING AND THRIVING SAN FRANcisco was vibrant with news from the Placer mines. Gold was flowing into the city from a thousand gulches. Every steamer took away its share from the limitless store.

Dissatisfied with the manner and amount of water supplied, first by two companies and latterly by one, the citizens became fretful. Demands were made that the city take into its own hands the supplying of this necessity.

Fires were frequent and disastrous. In the first few years of its history the city had been burned down six times. Everything was built of wood, even to the pavements. Roads had been built out in the Mission paved with planks. In these fires the pavements in the fire area burned as well as the buildings.

> "The 'Sydney Ducks' and an organization called 'The Hounds' caused much trouble. It was these gangs that set six fires which caused terrible disasters in San Francisco previous to July, 1851. The last of these fires, June 22, 1851, caused a loss of $3,000,000. It burned over the whole of ten blocks and a part of six other blocks. The fire swept away the last of the old buildings of Mexican days, including the old city hotel on the Plaza. Thomas Maguire's theatre, the 'Jenny Lind' was destroyed for the sixth time.
>
> In the fire of May 4, 1851, the burned district extended one-

third of a mile west from the water front, then Montgomery street, and three-fourths of a mile north and south. Over 2000 buildings were destroyed, many of them of brick from three to five stories in height.

The streets were planked and the fire ran along the streets, says the 'Annals,' almost as if it had been a train of gunpowder.

Every printing office, save the Alta on Clay Street hill, was destroyed. The following morning, said A. C. Russell to me, 'a solid stream of type metal ran from the office to the bay.'

One man by the use of vinegar saved his warehouse. He had no water, but he threw 80,000 gallons of vinegar on the flames and saved his place of business."*

The population was an odd mixture. The publisher of the City Directory says:

"Gold is the great human amalgam. It draws all castes and creeds, religionists and sects into the congregations of its worshippers. So it is in the great Hegira for California.

The turbaned Turk and the pig-tailed Chinese, the red-capped Malay and the 'stove-piped' heads of whiter nations joined in the train and bowed in its presence. All moral codes and immoral had their representatives. The wifeless Shaker and the well-wived Mormon."†

In order to meet the demands of this inrush of population John Middleton, Ferdinand Vassaull, A. D. Merrifield and Wm. G. Wood began plans as early as 1851 to utilize Mountain Lake in the Presidio and Lobos Creek as a water supply. They formed the Mountain Lake Water Company. The necessary ordinance was passed by the board of aldermen in June, 1851, to allow them the use of the streets.

Their scheme broke down, however, for lack of funds. While they were attempting to reorganize it A. W. Von Schmidt, John Bensley and A. Cha-

*Calif. Men and Events, p. 170.
†San Francisco Directory, 1856-7, p. 7.

bot "conceived the idea of turning the flank of the Mountain Lake Water Company and capturing its water."*

They organized the San Francisco Water Works on June 15, 1857, with Lobos Creek as their supply. John Bensley was elected president. This is described as "a stream of pure soft water, which has a natural outlet into the outer bay." It empties into the ocean near what now is known as Sea Cliff. It was supposed to have its source in Mountain Lake. The organizers believed that they could tap eventually the supply of the Mountain Lake Water Company.

An aqueduct 5 ⅓ miles long was built of rough redwood boards. It followed the sinuosities of the ocean and bay shore and conveyed the water to a receiving reservoir at Black Point. Here it was pumped by engines into two distributing reservoirs. One of these was at Greenwich and Hyde Streets; the other at Francisco and Hyde Streets. Both are still in use.

So fast did these men work that, notwithstanding the Mountain Lake Water Company began court proceedings to stop them, they succeeded in distributing some water into the city by September 16, 1858.

Bensley's scheme inspired one George H. Ensign to organize a company of his own. From the earliest period a spring of fresh water came out of the sidehill at a point on Mason street, about 100 feet north of Washington and about 1,000 feet west of the Plaza (Portsmouth Square). This was the spring from which Juan Miguel Aguirre latterly secured his supply for his donkey and barrel system alluded to in the previous chapter.

Ensign took the necessary steps to claim this water. In 1858 he got a franchise from the Legislature to lay down pipes. Owing to the fact that it did not run more than 5,000 gallons a day it was considered so insignificant that the provisions, usually included in the franchises of that period, for supplying water free for all municipal purposes, were omitted, with the exception that

*Swift's Account, Municipal Reports, 1876-7, p. 675.

it might be drawn on for the extinguishment of fires. It resulted in years of litigation later on and was the cause of much indignation and bad feeling.

Ensign with his franchise organized the Spring Valley Water Works for $60,000. He spent a few dollars (not above $25) in bricking in his fountain. He laid a few pipes. The next year A. W. Von Schmidt left his associates in the San Francisco Water Works. He had ambitions to bring in water from San Mateo County.

Schmidt interested Abel Guy, Pioche Bayerque & Co., and E. L. Sullivan and bought the franchise from Ensign of the Spring Valley Water Works. They also took over a small supply that had been introduced from Islais Creek by the Islais and Salinas Water Company. This company had built a dam across the creek near where the Mission Viaduct now is. The water was led in a flume around the hillside to a reservoir between Sixteenth and Seventeenth Streets. It now serves as the playground for the Lick-Wilmerding School.

The Spring Valley Water Works was strengthened still further by such men as W. F. Babcock, Charles Main, N. Luning, Erwin Davis, J. G. Kittle and C. L. Low. It was reorganized with a capital of $3,000,000 with W. H. Tillinghast as its president; and plans were made for large extensions.

These men secured the services of Hermann Schussler, a young engineer, born in the little village of Rastebe, in the Grand Duchy of Oldenburg, Germany. He had come to California but recently, fresh from the universities of Karlsruhe and Zurich. He had had some engineering experience in Switzerland.

The choice of Schussler, while not realized at the time, was a momentous one for the City of San Francisco. He was a dominant figure in the affairs of the Spring Valley Water Company for fifty years. He developed the city's water system as it exists today. Upon his recommendations the company little by little secured its vast holdings of over 100,000 acres of land.

Schussler was sent into San Mateo county to create what is now Lake Pilarcitos. He built an earth dam across a small creek there in a short time. Later as the needs of the city grew he built another dam and created Lake San Andreas; then the concrete dam which turned a beautiful valley into what is now Crystal Springs Lake, nine miles in length.

The building of this large concrete structure was an achievement widely heralded throughout the country at the time. With modern methods the dam has been exceeded, but half a century ago no such structure had ever been built in this part of the country.

As the demand grew he prospected the Alameda side of the bay for water. He discovered the underground gravel supply near Sunol, where the Water Temple is. He secured these for the company as well as the artesian supply near Pleasanton, and at Dumbarton laid the submarine pipes across the bay which bring this water into San Francisco.

Simultaneously with the building of Lake Pilarcitos dam the Laguna Honda reservoir had been built in this city near the present Relief Home. A flume 18 by 30 inches conducted the water from Lake Pilarcitos into Laguna Honda. The completion of this work was heralded with a celebration.

The Mountain Lake Water Company never did operate. But the San Francisco Water Works and the Spring Valley Water Works were competitors until a few years later when the two were consolidated, the Spring Valley Water Works taking over the enterprise and securing a virtual monopoly.

Money was plentiful. Large sums were being realized in all lines of trade. The men who engaged in the water business were no different from the rest. They proposed to make "all the traffic would bear."

Fires continued. Notwithstanding the efforts of the water company to meet the demands made, complaints were frequent. It is questionable whether any company could have kept pace with the spread and growth of the city.

Mayor Thos. H. Selby in his final speech said:

> "The whole subject of an increased water supply ought to be submitted to the Board of Works, with the view of making it a public enterprise to be owned by the city, so that the people may have an unrestricted use of water without price, other than the tax required to build the works and keep them in order."*

A committee had been appointed in 1870 consisting of Supervisors A. Badlam, A. B. Forbes and Stuart Menzies to investigate sources for a possible water supply for San Francisco. They investigated Lake Tahoe, Clear Lake and peninsula sources.

The committee had called to its assistance Lieutenant-Colonel of Engineers, Brig. Gen. B. S. Alexander, and Professor George Davidson of the U. S. Coast Survey. These men went with the committee on a tour of investigation. Alexander in his report says:

> "People in our American cities look upon water as a necessity, not merely a luxury. The consequence is they use it lavishly.
>
> Let San Francisco obtain for herself an abundant supply of wholesome, fresh water—100 gallons for each inhabitant daily, and the diminished rates of insurance, the increased comforts of living, the new demand for houses and lots and the increased value of property will be such, that her citizens will be found willing to carry the added financial burden."†

Professor George Davidson said:

> "I believe there is an adequate supply of good water on this peninsula for a city of 1,000,000 people."†

Finally Mayor Wm. Alvord said:

> "I cannot abstain from expressing my conviction that an element as vital as the air we breathe, and as freely furnished by the Creator should not be confined as a merchantable commodity in the hands of a few individuals."‡

*Municipal Reports, 1871-2, p. 614.
†Municipal Reports, 1871-2, page 639.
‡Municipal Reports, 1873-4, page 644.

Lake Pilarcitos—The city's first source of supply in San Mateo County. The earth dam at the far end was built by

PLATE IV.

AT LOGGERHEADS

THERE WAS NO PILLAR OF SMOKE by day nor of fire by night to lead the people out of their difficulties. For sixty years the desire to own, operate and control its own water supply has persisted. Up to the present moment that long deferred hope has not been realized.

Antagonisms were aroused which prevented the people from taking a statesmanlike view of the problem, solving it once and for all by the purchase of the Spring Valley Water Works. Instead of this they tried every way but the direct one. The time, money and energy which have been expended in making investigations of other possible sources, the consideration of the reports of engineers on a dozen different projects, the fighting of litigation are beyond all computation.

While in the early years of the city's history the principal complaint was a shortage of water and mains, other elements were entering into the controversy. Protests began to be made against the charge for water.

Unexpectedly in the year 1869 the Spring Valley Water Works gave notice to the supervisors that it would not serve any more water free to the city for municipal purposes, other than for the extinguishment of fires. The company had apparently discovered the omission in the franchise granted George H. Ensign, which only provided for the furnishing of water free for fires.

W. F. Babcock, president of the Spring Valley Water Works, wrote to the supervisors in that year as follows:

> "The city has no more right to take the property of said water works without compensation than she has to take the property of the gas company or of any private citizen."*

Notice was served then and there upon the city that it would thereafter be treated as any other consumer. The municipality refused to pay the bills. The matter was taken into the courts. For eleven years and until the adoption of the new constitution in 1880 there was litigation over these charges.

At one time the water company had a bill of $400,000 against the commissioners of Golden Gate Park alone. The water at another time was shut off the north half of Jefferson square. Notice was served that no more water would be served the public buildings until bills were paid.†

In the meantime the litigation that had begun over the bills had reached the Supreme Court. That body rendered a decision which was interpreted by the company as a victory for it. The supervisors thereupon compromised and enacted an ordinance providing thereafter for the payment to the water company of $15 a month for hydrants, $500 a month for Golden Gate Park and $7,000 a month for the municipal buildings. When the measure reached the Mayor he promptly vetoed it. The litigation was begun again.

A second attempt now was made to secure a water supply for the city. On March 30, 1874, the Legislature passed an act giving to the city the right to purchase or condemn a water supply. Under the provisions of that act T. R. Scowden was appointed water engineer on August 3, 1874. He spent eight months in making studies of possible sources at Blue Lakes, Alpine County, Clear Lake, Lake County, Lake Tahoe, the Spring Valley sources on the peninsula, and Lake Merced within the city limits.

*Municipal Reports, 1876-7, p. 679.
†Municipal Reports, 1876-7, p. 699.

He made a recommendation in favor of Calaveras Valley in Alameda County on April 19, 1875. His estimate for building a dam across the Calaveras Creek and bringing in water to the city from that source was $10,655,052. The special committee having the matter in hand immediately began overtures for the purchase of the properties from the Alameda Water Company.*

On May 17, 1875, the special water committee requested the Mayor, Auditor and City Attorney to purchase the Calaveras Valley. In the meantime the Spring Valley officials had not been idle. They wanted no rival. While the negotiations were under way between the city and the Alameda Water Company the Spring Valley hurriedly bought the Calaveras Valley, it is said for $1,000,000. Eight days later the following note was received by the city's representatives:

San Francisco, May 25, 1875.

James H. Deering, Esq.,
Chairman of Water Supply Committee.

Dear Sir: I would respectfully state, for the information of your committee, and through them to the honorable board of supervisors, that the Alameda Water Company have disposed of their rights and real property appertaining thereto to the Spring Valley Water Company of San Francisco.

Yours respectfully,
C. N. Felton,
Pres. Alameda Water Co.

Thus the city was thwarted in its effort to secure the Calaveras and go into the water business as a rival of the Spring Valley. A request was then made of the Spring Valley Water Works to fix a price on its properties.

In reply the company named a price of $14,500,000 on its peninsula properties and an extra $1,000,000 for the Calaveras Valley.

This offer was refused in a statement signed by James Otis, Mayor, Mon-

*S. F. Directory, 1876, p. 35.

roe Ashbury, Auditor and W. C. Burnett, City Attorney, empowered to act by the Legislature. They said:

> "We decline the offer, on the ground that the price named is much in excess of the true cost of the works as shown by their own books."*

The succeeding year another excursion into the country for a possible water supply was started. Dogged and determined, the city officials appointed a board of water commissioners consisting of A. J. Bryant, D. J. Murphy and George F. Maynard, to make a recommendation.

This board employed Col. George H. Mendell of the U. S. Army, an able engineer, to assist them. It was now the third time engineers had been employed to make investigations besides several attempts to come to terms with the Spring Valley for the purchase of its properties. A year was spent in making studies.

At a meeting on October 15, 1877, a committee of the Board of Supervisors said an offer of $11,000,000 had been refused by the Spring Valley.†

The commissioners looked over the properties of the El Dorado Water and Deep Gravel Mining Co., Clear Lake and Putah Creek, Lake Tahoe, Mount Gregory and Rubicon River, Blue Lakes in Alpine County, the Mokelumne River, San Joaquin, South Yuba, the Feather River, the San Mateo Water Works, and the Spring Valley properties. A report was filed on January 7, 1878, recommending that the Blue Lake scheme be adopted. The committee said this was the most available source and proposed entering into contracts for the construction of suitable works.

The matter was referred to the city and county attorney for an opinion. He held that no power had been given in the act of the Legislature to construct works except on the peninsula adjoining San Francisco. Negotiations for the Blue Lakes accordingly were broken off.

*Municipal Reports, 1874-5, p. 696.
†Municipal Reports, 1876-7, p. 928.

The attention of the commission again was directed to the properties of the local water company. No agreement, however, could be reached as to the price.

> "It was their opinion that the only remedy for the evils of a water famine or a water monopoly was to condemn the entire water supply on the Peninsula."*

A new commission was appointed consisting of James R. Kelly, Patrick Crowley and Dr. J. L. Meares to appraise the properties of the Spring Valley Water Works and fix the sum the city must pay should it acquire the system.

Pending the action of this commission a bill was introduced in the Legislature and passed the lower house in 1878, authorizing the city to purchase the Spring Valley Water Works. The price named in the bill was $15,500,000. The following was written at that time:

> "The manifest injustice of these figures, so utterly beyond the real value of the property in question, awakened such a storm of indignation and brought forth so vehement a protest from the people of the city, that the bill never was pressed to passage.
>
> Since that time no further steps have been taken in the matter of the purchase. A general sentiment is, however, gradually manifesting itself in the community looking to the establishment of a right on the part of the people over the rates as well as the property of water companies."†

The new state constitution went into effect in 1880. Under this instrument all municipalities were required to pay for water used for municipal purposes. In July of that year it was decided that the city should pay about one-quarter of the entire amount paid the water company, three-quarters being assessed to the consumers. The city's bill for July, 1880, was fixed at $27,000.

*City Directory, 1878, p. 31.
†S. F. Directory, 1879, p. 29.

In 1882, the supervisors' committee on water supply made a characteristic report showing the attitude of the people. The report was signed by F. F. Strother, E. B. Pond, and Herman Ranken and read in part as follows:

> "Your Committee beg leave to represent that the people of the city and county, irrespective of politics, were and are in unison in demanding a reduction of the price of water so indispensable to human wants and necessities; and so universal was this feeling that no candidate for the office of supervisor could have secured a nomination until he pledged himself to use his best efforts to bring about relief to our much oppressed citizens, more particularly was this the case in the platform of the political party whose nominees we were, as the recitals were explicit and to the point and so binding that no conscientious man could accept a nomination and fail for any reason in substantially carrying out the instructions therein contained on this very question, or break a pledge so solemnly given.
>
> The system of establishing the cost and valuation of the works of the Spring Valley Water Company is fictitious, for it is well known and cannot be successfully controverted, that this property from a trifling expenditure has grown by what it has fed upon; that its present works and property have been acquired mainly from the proceeds of the onerous burdens which it has exacted for the blessings of water, so indispensable to human wants. . . .
>
> This course so long pursued without any limit to this system of extortion, except when it pleased the corporation to allow the burdens to be lightened, was the undoubted cause that led to the adoption of that provision in the New Constitution which placed the sole power in and made it the duty of the Board of Supervisors to fix water rates; in other words, placed in the power of the representatives of the people the duty to fix the rates for water which the people used."*

*Appendix Municipal Reports, 1882-3, p. 153.

A year later Pond, in a minority report of the committee on water and water supplies said:

> "The San Francisco City Water Works was organized in August, 1857, with a capital stock of $1,500,000 which was increased in June, 1864, to $2,000,000. The Spring Valley Company was organized in June, 1858, with a capital stock of $60,000 which was increased in June, 1860, to $3,000,000. These two companies consolidated and formed the present company in February, 1865, with a capital of $6,000,000 which was increased in March, 1868, to $8,000,000; increased in 1884 to $9,000,000 while in July, 1885, it will be increased to $10,000,000.
>
> The increase of the capital stock to justify the dividends paid and enrich its holders, and augment the valuc of the properties, has been the practice and purpose seemingly from the first organization of a water company in this city. The subsequent consolidation of the companies fastened all the water stock ever issued upon the people to hold sacred and provide for, although even the companies never realized its par value from its disposition, under the most favorable circumstances. The actual cost of valuation of this property cannot be ascertained by reason of the fallacious system by which the same are estimated by the Company."*

The majority members of the committee, were W. B. Farwell, A. L. Farnsworth and Samuel Valleau.

It will be seen that for thirty years the fixing of water rates was a recurring annual squabble—from 1880 until 1910 when the Constitution was changed, which made the State Railroad Commission the arbiter between the corporation and the people.

* Appendix Municipal Reports, 1884-5, p. 96.

GROPING

IT HAS BEEN SAID THAT THERE IS some truth on both sides of any argument. In other words, that one side is never wholly right and the other wholly wrong.

In the differences between the people and the Spring Valley Water Works continuing over many years, both sides believed that they were justified in their actions.

In the lack of an arbiter who could deal with the subject of rates, it might be said, lay the germ of municipal ownership. Court actions were too slow and complicated to deal with the annual fixing of rates. The antagonisms that had been aroused, particularly on the side of the people, finally led to the provision contained in the present charter which provides for the gradual acquirement of all public utilities.

It seemed to be the only solution for the ever recurring wrangle over rates. These wrangles finally were stilled with the change in the State Constitution in 1910. This change provided for the organization of the State Railroad Commission and conferred upon it the right to fix rates, to make valuations of public utility properties and gave it other large arbitrary powers.

It took many years of discussion before the rights of the people or the corporations were determined fully. If, indeed, they can be said to have been definitely determined at the present moment. They were groping about without a compass in an effort to end the irksome tangle.

On April 18, 1876, Chas. Webb Howard, president of the Spring Valley Water Works, wrote to the water commissioners appointed to fix rates as follows:

> "As to furnishing data for the purpose of enabling your board, as such, to regulate the price at which the Spring Valley Water Works shall sell water, or otherwise interfere with the business property of this corporation, I most respectfully decline. . . .
>
> It has and claims the same right to regulate and control its own property and business as any individual has to control and regulate his private affairs."*

This looks oddly enough in print in this year of 1926. Fifty years ago the company was standing upon what it firmly believed to be its rights.

The people, however, also believed that they had certain rights although but dimly discerned at the time. The Legislature had passed an act years before providing that a board of commissioners fix the rates each year. In 1877, Mayor A. J. Bryant sent a message to the supervisors stating:

> "Rates must be determined by a board of commissioners, to be selected as follows: Two by the water company, two by your honorable body; and in case the four cannot agree as to the valuation, the Statute prescribes the course then to be taken."†

No rates ever had been fixed under this provision. But on July 23, 1877, Isaac Freidlander and on August 13, 1877, H. B. Williams were appointed by the Mayor as commissioners. The water company named Wm. F. Babcock and Chas. Webb Howard to represent it. The company thus for the first time recognized the right of the people to have a voice in the management of its affairs.

A few years later the Legislature went a step further. Article XI of the Constitution was amended in 1884. The new provision stipulated that persons and corporations were granted the use of the public streets "upon con-

*Appendix Municipal Reports, 1875-6.
†Municipal Reports, 1877, p. 675.

dition that the municipal government shall have the right to regulate the charges thereof."

But neither commissioners nor the constitution could reconcile the difference in the viewpoint between the company on the one hand and the people on the other.

Supervisors ran for office during that period on a pledge to reduce water rates. The attempts to carry out these pledges were resisted by the water company. It claimed that proper allowance was not made for its investment and that extensions and betterments could not be made under the rates allowed. To settle the differences the courts were again resorted to.

On September 28, 1889, a letter was written to the supervisors signed "John Smith and One Hundred Thousand," in which it said:

> "This discussion and contest have been going on for years. It will continue until the city acquires control of its water system. The city should and must own its own water supply. Either buy out Spring Valley or adopt the Lake Tahoe proposition."*

Finally in sheer desperation, on April 16, 1894, an advertisement was ordered published by the Board of Supervisors in the *Examiner*, *Post* and *Daily Report*, for proposals from parties desiring to furnish water to the City and County of San Francisco. There were replies from people interested in supplies on the North Fork of the American River, the El Dorado Water and Deep Gravel Mining Company, Lake Tahoe and other projects.†

The most interesting, but the least thought of at the time, was a proposal from George M. Harris that the city acquire his rights in the Hetch Hetchy Valley and the Tuolumne River for its entire length, from the mountains to San Francisco Bay for $200,000. Nothing resulted from this offer, but the possibilities of the Hetch Hetchy Valley had been pointed out.

The records do not seem to disclose that the Hetch Hetchy Valley and

*Municipal Reports, 1890, p. 172.
†Municipal Reports, 1893-4, p. 155.

San Francisco,
May 11, 1894.

Gentlemen of the Committee on Water Supply:

I present to your notice for a supply of water the River Tuolumne and its numerous extensive tributaries.

The first visit of the writer to this bright river was at Jacksonville, in September, 1849, and lived and worked successfully there until the spring of 1856.

Visiting and working at the same camp several times since, the last time in December, 1903.

Dr. James L. Cogswell, dentist, corner Kearny and Bush, San Francisco, and Alpheus Orcutt, Sr., Jacksonville, working with me in that place in 1849, and the latter still lives there with his family.

Going up the excellent road of John R. Morfitt, by crossing his iron bridge at his house, below Jacksonville, on the rise of the mountain on Moccasin Creek, leaving the river, in seven miles we reach Priasto; then to Big Oak Flat and First and Second Garrote we continue on to the rise to Crooker's (forty miles from Chinese Camp).

Here we turn to the left and move over the Tioga road which crosses the Yosemite and Hetch Hetchy valleys.

Now on our left is the grand canyon of the Tuolumne River.

It is called, from its length and gloomy depths, the Twenty-seven mile canyon.

Here is the greatest storage of the purest water the world ever saw, in quantity and quality unexcelled.

Its bed is the insoluable granite and gneiss rock.

By putting in a dam at the mouth of this canyon it will safely store at a moderate estimate 1,000,000 gallons of water all through the year.

This water is now applied for to the department of the United States government for right of way.

It is probable that the rock of the country holds gold and silver. It is wild and unexplored.

It is on a slope more or less rapid. The water is at an elevation of a mile and a half.

The extent of drainage is beyond estimate.

At Jacksonville Mr. John R. Morfitt, who has flumed the river for several years when living at the bridge, found an outflow of over 500,000 gallons daily.

I called on Mayor E. B. Pond twice in 1888 in relation to this matter. He said it was his impression that complete water works would be purchased if offered by responsible parties to the city for sixteen or seventeen millions of dollars.

Saw Senator Hearst, likewise, who gave no direct answer.

Called at the back room of the Nevada Bank on genial Col. James G. Fair, who read my letter over twice, but gave no decided opinion.

Mr. Townsend, of the Examiner, read my proposition, but did not accept.

I saw all these parties in 1888.

I will convey to the city of San Francisco all my rights and interests in the River Tuolumne, from the head of the Grand Canyon of the river to its outlet to the bay, for $200,000. in San Francisco city bonds, bearing interest and legally executed, or that amount in cash, at your option.

Yours respectfully,

GEORGE W. HARRIS
Room 6, c/o Dr. James L. Cogswell,
dentist, Post Building.

PLATE V.

Hetch Hetchy Valley and Tuolumne River offered as a water supply in 1888. Mayor E. B. Pond, Senator George Hearst and Col. Jas. G. Fair approached.

Tuolumne River had ever been brought formally to the attention of the supervisors as a possible water supply until Harris submitted his offer. He said that he had mined along the river since 1849 and had suggested it to Mayor E. B. Pond in 1888. Others, however, had been working on a scheme of magnificent proportions with the upper Tuolumne River as its source of supply.

A map was recently discovered on file at Sonora, capital of Tuolumne County, dated 1882, drawn by J. P. Dart, engineer, for the Tuolumne and San Francisco Water Company. It is now in possession of City Engineer O'Shaughnessy.

The map shows a proposed diversion of water from the Tuolumne River at a point about fifteen miles northeast of Groveland, above the junction of the main Tuolumne River and the north fork. The water was to be conducted in an open ditch along the south side of the Tuolumne Canyon to a point near La Grange.

From this point it was to be piped across the San Joaquin Valley passing near Oakdale and Lathrop thence through the hills south of Antioch and Martinez to a reservoir between Martinez and Berkeley. (The present San Pablo reservoir of the East Bay Water Company has been built apparently at about the location selected by Dart as a reservoir site.)

From this reservoir one main was to pass through the east side of Berkeley and Oakland to Bay Farm Island thence under the bay to Hunters' Point into San Francisco.

A branch of this main was to extend southeast from Oakland to Livermore and San Jose, while a branch from Lathrop would go north to Stockton and Sacramento.

Two years later an illuminating statement was issued by Dr. C. A. Clinton, James E. Britt and Dr. Washington Dodge. The following are extracts:

> "These annually recurring investigations by the board of supervisors are popularly believed to be schools for perjury. . . .

The belief becomes deeply impressed on the public mind that a 'solid seven' or a 'solid nine' have once more been bribed to violate their ante-election pledges. The moral effect of all this upon the community is necessarily pernicious.

But there is no possible way of avoiding it except by the city's construction or acquisition of its own works. . . .

Municipal ownership is the only possible means of escape.

In view of these facts, your committee is of the opinion that now is the time to strike for city ownership.

The recommendation of the city's acquiring water works of its own is not made in any spirit of hostility to the Spring Valley Water Works.

Your committee have the highest admiration for the magnificent works constructed under the direction of Mr. Hermann Schussler, its talented engineer, of whose marvelous achievements the Company and the State have just reason to be proud. . . .

If the people of San Francisco must be dependent on a private corporation for their water supply we believe they will receive as fair treatment from the Spring Valley Water Works as they can reasonably expect from any other private corporation . . .

The fault is not in the Company but in the system . . .

The policy of this company in preventing opposition by acquiring water sites and sources shows active business enterprise to look after the main chance—the pockets of its stockholders . . .

Where the corporation enjoys a monopoly it is folly to hope that it will not insist upon the privileges which the monoply confers upon it."*

This was the frame of mind of the people in 1899, when J. H. Quinton, consulting engineer, wrote the following description of the Hetch Hetchy Valley again suggesting it might serve the City of San Francisco as a water supply:

"The valley proper is about three and one-half miles long, and its width varies from one-quarter to three-fourths of a mile. The

*Municipal Reports, 1896-7, p. 91.

> rugged granite walls, crowned with domes, towers, spires and battlements, seem to rise almost perpendicularly upon all sides to a height of 2,500 feet above this beautiful emerald meadow which seen from the trail approaching it from the east, is never to be forgotten.
>
> It was visited in May, when the snows on the glacier meadows at the higher altitudes were rapidly melting, and the river was bank full and overflowing the lower part of the valley. The water is here dammed up owing to the narrow outlet between high mountains of granite. At one place in this gorge, below the valley, the granite walls on either side approach so as to confine the river at low water to a width of about 20 feet."*

Quinton had been engaged by J. P. Lippincott of the U. S. Geological Survey in measuring the stream flow of the rivers in the Sierra Nevada Mountains. It was for the purpose of measuring the flow in the Tuolumne that he visited the Hetch Hetchy Valley. He pointed out the possibilities of using this valley for irrigation purposes and then said:

> "Another purpose which the dam and reservoir might be made to serve would be to furnish the City and County of San Francisco with an unfailing supply of pure water."

Wm. H. Hall was the head of the California Division of the U. S. Geological Survey in the early 90's. In 1891 he had Luther Wagoner make a preliminary reconnoissance of possible reservoir sites on the Tuolumne River.

A survey was made of Lake Eleanor, of which photographs and a map are found in Part 2, 11th Annual Report, U. S. Geological Survey, 1889-90.

The Hetch Hetchy Valley, known as Reservoir Site No. 33, is found in the 12th Annual Report of the U. S. Geological Survey, 1892, page 32, with one of Cherry Valley. All of these three reservoirs are included in the present Hetch Hetchy project.

Special consideration may be given at this juncture to the famed valley.

*U. S. Geological Survey, 21st Annual Report, Vol. 4, p. 459.

The far-famed Hetch Hetchy Valley in its natural state, looking up-stream from the dam site. By the erection of the O'Shaughnessy dam it has been transformed into a mountain lake.

NATURE'S HANDIWORK

HIGH UP IN THE SIERRA NEVADA Mountains is a small region more valuable than untold miles of the surrounding terrain. Like gems or precious metals, whose value is inverse to their size or quantity—when compared with grosser substances—this spot is priceless.

It is a gouge in the solid granite at an elevation of 3,500 feet. There are mountains and whole ranges of the same material. It is lost among the thousands of canyons and gulches that sear and gash those desolate regions.

Man's mind, however, accustomed as it is to the creation of splendid and huge undertakings would be staggered by an attempt to create a duplicate.

Mountains are formed and are the indication of the pressure of natural forces from within this spheroid, upward. This gouge in the mountains is the effect of forces working in the opposite direction—downward.

Geologists speak of glacial action in attempting to account for it. Whether it was cut or ground or gouged by the heel of an irresistible glacier, or worn through eons of time by the action of falling waters, or both, it represents the expenditure of vast amounts of energy-work.

How long it took to form no man can say. What the processes were that started to differentiate this particular canyon from thousands and tens of thousands of others are entirely problematical.

In this difference, however, lies its great value. A canyon in the mountain range usually slopes at an acute angle towards the sea, while the floor of this one, to the eye is level. In the summer time its floor was a beautiful mountain meadow of some 1,200 acres.

One other important factor remains—its outlet. Comparing it again to the ordinary canyon, whose sides roughly form a V-shape, the walls of this one are perpendicular. These walls approach each other at the lower end to within a distance of twenty feet, forming a narrow gorge cut down sharply into the solid granite for hundreds of feet.

Here then is one of nature's works adapted to the needs of mankind. At the time this granite basin came burnished from the hand of the Workman, it glistered in the sunlight. As time wore on the floor of the valley was covered to some considerable depth with the wash and detritus of the upper reaches. Grasses took root and trees grew to stately dimensions.

The region about is barren and desolate. Surrounding the valley on every side are a succession of ridges and ranges culminating to the eastward in the crest of the Sierras with the towering peak of Mt. Lyell, twelve or fifteen miles in the background. Its living glaciers contribute water to the rival cities of San Francisco and Los Angeles. The valley was an objective for all grazing animals.

In the winter it is unapproachable. It becomes a part of the vast solitudes of snow that cover the Sierras for their length. All living things flee this inhospitable land with the first frosts. They seek the lowlands only to return when spring is spent and the summer has well advanced in the great valleys of the interior.

Out of the twilight of the past comes the name Hetch Hetchy, as designating and differentiating this canyon, valley, gorge or what you will from all of the other groutings, defiles and corrugations that give the Sierras their peculiar aspect.

Nature formed it and the Indians gave it the name Hetch Hetchy. What this meant in Indian lore has been lost. The Indians have disappeared. Some say it has reference to the grasses; others to the winds, and again others to some stately pines standing like sentinels on either side of the narrow end of the valley. Wm. J. Bryan once humorously said that he thought it some sort of an Indian War Dance.

Who the first white man was to set foot in it, no one knows. It is unimportant, some wandering prospector probably, from one of the mining camps along the Mother Lode.

Its luscious mountain grasses, however, early attracted the pioneer California settlers. The stock raisers, who learned from the Spaniards to drive their sheep and cattle into the mountains for feed when the lowlands are parched and dry during the summer months, knew of this valley. They would race their droves in order to be first to reach its fertile pastures.

These grasses, growing from turf formed by centuries of accumulations, grow waist high if untouched. Tons upon tons of it grew to the acre. The 1,200 acres furnished fodder for thousands of head of sheep and cattle that entered lean and lank in the spring, but left rolling fat and hardly able to negotiate the precipitous and difficult defiles out of the mountains, in the fall.

Ultimately it became so desirable that some of the lands were patented under the laws of that time. Several hundreds of acres of the most desirable and advantageously located were preempted. The owners established rude quarters, which they abandoned in winter, but to which they returned with their herds the following summer.

The fell eye of the engineer finally took in the economic possibilities of this Arcadia. Its height above sea level; the narrow gorge readily dammed to any height suggested even to the uninitiated, water and power possibilities of tremendous value.

John R. Freeman, in a report on this subject said:

> "Nor is there known to exist within reach, on any of the other California rivers, a dam site which gives so large a volume of storage for an equal quantity of masonry, as the Hetch Hetchy.
>
> Plainly it is an absolute impossibility to secure a cleaner reservoir site, or one that will possess a larger proportion of bare granite walls all the way between the high and low water limits."*

This valley lies 170 miles due east of the City of San Francisco and 16 miles to the north. Far removed from populous centers, high up among granite fastnesses, inaccessible to any means of conveyance other than mule or horseback over precipitous trails, for nearly a century it remained a challenge and a lure.

*Freeman Report, p. 151.

PROGRESS

THE YEAR 1900 DAWNED AUSPICIOUSly. The citizens of San Francisco attempted to consolidate their gains in the knowledge of experimental government by the adoption of a charter. It contained what they had learned in the previous half century, with hopes and aspirations for the future.

They believed that they knew quite definitely what they wanted. And they proceeded to write it into their Magna Charta. Mayor James D. Phelan in his message for that year said:

> "The inauguration of the new government under the charter is the most noteworthy event in the history of San Francisco."*

It was the city's bill of rights from the Legislature or "Home Rule," as he termed it. In the light of subsequent events it made little or no provision in many of its features for growth. In this respect it was the very antithesis of the Federal Constitution.

The charter had hardly been adopted before it was out of date. Mayor Phelan in his message two years later said:

> "It is certain that the Charter needs many amendments and much revision. I recommend strongly immediate action by your

*Municipal Reports, 1899-1900, p. 9.

committee on charter amendments looking to speedy relief in this connection."

The minuteness of detail is responsible today for the thirty or forty amendments that are presented every two years to be voted on by the people.

The Federal Constitution drawn in liberal terms has survived for several centuries with few amendments. It, however, has kept a Supreme Court busy stating what can and cannot be done under its most general provisions.

At the suggestion of Mayor Phelan the city adopted a flag, with the emblem: "Oro en paz, fierro en guerra"—"Gold in peace, Iron in war."

The Mayor said this sentiment, which was on the State Seal, was most appropriate because California is the Golden State and San Francisco had become the point of debarkation for the troops engaged in the Spanish-American war, a California regiment being among the first to start for the Philippines from San Francisco.

Civil Service had been provided for; commissions such as the Board of Works, Board of Health, Park and other bodies were formed.

The Board of Works, to which was now passed the responsibility for studying and making a recommendation for a future water supply was organized with Col. Geo. H. Mendell, president, A. B. Maguire and Marsden Manson the other members. C. E. Grunsky was elected city engineer.

On February 5, 1900, the Board of Supervisors adopted resolution No. 13 in which they called upon the Board of Works to make a report and recommendation on a municipal water supply. In fact the charter itself made it mandatory that such a report should be made within a year.

In response to this oddly numbered resolution Colonel Mendell sent a communication to the Board of Supervisors in which he said:

> "The great cost of any new water supply and the complexity of the problem demands thorough investigation and great subsequent deliberateness in arriving at conclusions."*

*Appendix, Municipal Reports, 1900-1, p. 226.

He suggested, according to the charter, the calling for offers of sale to the city of existing utilities and other water supplies. This was done and again numerous offers were made to the city. The Lake Tahoe scheme was revived by A. W. Von Schmidt. Some of the supervisors made an inspection trip to the lake. But owing to the fact that it lay partially in another state it was finally decided not to attempt acquiring it.*

Offers were also made by the Marysville & Nevada Power and Water Company for water rights on the North Yuba, accompanied by an opinion as to the validity of its title by Judge Niles Searls. Jay E. Russell offered rights on the American River; M. C. Taylor on the North and Middle Yubas; the Eel River and Russian River Water Works rights on those streams; D. E. Gish & Co. an artesian supply in Santa Clara County.

There were also offers of rights on Coyote Creek, the Middle Fork of the Stanislaus, an artesian supply from the Dumbarton Land and Improvement Company and Prince P. A. Poniatowski, promoter of Tanforan race track, made an offer of rights owned by the Standard Electric Company.

An offer was also solicited from the Spring Valley Water Company, but an unfortunate paragraph in the communication caused resentment on the part of the company. The supervisors in the resolution sent the water company said:

> "The Spring Valley Water Company is also requested to bear in mind that any over valuation of its water system will compel the people of San Francisco to look elsewhere for their water supply. And the withdrawing of San Francisco as a market for the sale of the company's water will reduce the value of the company's lands to what they are worth for agricultural purposes merely."†

This paragraph drew a reply from the water company in which it said:

*Appendix, Municipal Reports, 1900-1, p. 385.
†Appendix, Municipal Reports, 1900-01, p. 400.

"It is not customary in ordinary negotiations that the buyer should demand a price for property based upon its alleged power of destruction."

No offer was made at the time as the company said that the supervisors had not followed out the Charter provisions regarding the manner of acquiring a public utility.

In his report for the year 1900-01 City Engineer Grunsky called attention to the report of J. P. Lippincott, contained in the U. S. Geological Survey regarding the Hetch Hetchy Valley. It was under the direction of Lippincott that J. H. Quinton, previously referred to, measured the stream flow of the Tuolumne River. Grunsky, at the instance of the Board of Works, had Lippincott make reconnoissance surveys, upon which data an estimate of the probable cost of building a dam and storing the water in the Hetch Hetchy Valley and bringing it to San Francisco, was compiled, and which is given as follows:

TUOLUMNE RIVER PROJECT
60,000,000 M. G. D.

Hetch Hetchy Reservoir, dam, roads, bridges, etc.	$830,000
Diverting dam, Tuolumne River	75,000
Canal, 19½ miles	585,000
Tunnels, 34,300 feet	857,500
Special Structures on Canal	180,000
Power Station near Moccasin Creek:	
Intake reservoir, by-pass, 6,000 kilowatt generators, 12,000 H. P., water wheels, etc.	577,000
Canal, 12 miles	240,000
Tunnels, 17,000 feet	510,000
Crossing Tuolumne River	164,000
Power station at Dry Creek	526,200
Pole line and wires from Mocassin Creek to Dry Creek, 75 miles	120,350
Pipes across San Joaquin Valley	7,006,500
Special structures	330,000
Carried forward	$12,001,550

TUOLUMNE RIVER PROJECT—*Continued*

Brought forward	$12,001,550
Pumping station, 11,000 H. P.	797,800
Force pipes from pumps to Altamont Reservoir	1,032,200
Altamont Reservoir	53,350
Pipe: Altamont Reservoir to San Francisco, 73 miles	9,323,800
Tunnels, 7,200 feet	259,200
Special Structures	450,000
Auxiliary storage	1,862,800
Telephone lines	20,000
Engineering and contingencies, 13%	3,354,100
Loss of interest at 5%	1,290,000
Lands and rights of way	761,400
	$31,206,200
City distributing system	7,000,000
	$38,206,200*

In concluding his report Grunsky says:

> "In the matter of water supplies alone, the investigations required to be made should not be undertaken with any idea of reaching final conclusions within a year."†

These figures are unimportant except to show the original estimate of the cost of the Hetch Hetchy project and that Lake Eleanor was apparently not included in the project.

*Municipal Reports, 1900-1, p. 413.
†Municipal Reports, 1900-1, p. 341.

THE DECISION

THE SOLUTION OF MOMENTOUS problems often comes about quite simply. It was so with the final selection of a future water supply for San Francisco. With the comparative data before it as to the cost and availability of various water supplies, the question may be said to have answered itself.

But with the answer at hand, and the plan of action necessary to secure it almost simplicity itself, the carrying of it out encountered many unforeseen annoying obstacles, delays and complexities.

Just one year and a half after the adoption of the Charter in 1900, the Board of Works made its recommendation that the Hetch Hetchy Valley and Lake Eleanor were the best possible supply for the City of San Francisco.

Both of the sources lie within the limits of the Yosemite National Park comprising some 1,500 square miles of territory. This wonderland had been ceded to the Federal Government by the State of California in 1890 as a national park.

In July, 1902, City Engineer C. E. Grunsky wrote to the Board of Works as follows:

> "To prevent certain privileges and rights that may be of vital importance from falling into the hands of speculators, private individuals or private corporations adverse to the interests of this

> city . . . application should at once be made to the Secretary of the Interior to set apart for the use of this city the Hetch Hetchy Valley and Lake Eleanor reservoir sites."*

At conferences among themselves the members of the Board of Works and the City Engineer had previously arrived at a determination. They had conferred with Mayor Phelan and decided that the preliminary moves should be made quietly.

Correspondence was entered into with J. P. Lippincott, the coast representative of the U. S. Geological Survey. He was employed as the city's agent to go into the mountains, make preliminary plans and surveys and file claims for water rights in the name of James D. Phelan.

Secretary of the Interior E. A. Hitchcock subsequently complained in a letter to the President, saying:

> "It appeared that the survey of the sites in question had been made surreptitiously, and without securing the consent of the Department to entering the reservation for that purpose."†

The wisdom of having Lippincott act for the city at once becomes apparent. He had been all through the region and was familiar with it, as previously noted and his movements in the national park were not questioned.

City Engineer Grunsky filed with the Board of Works his estimates of the cost of the four most available water supply sources to justify his decision regarding the Hetch Hetchy Valley. He says:

> "It may be noted that on the basis of a city supply of about 50 to 60 million gallons of water per day, the first cost of works, purchase and completion, would be about as follows:

Spring Valley (including Calaveras)	$37,000,000
Tuolumne River	39,531,000
Lake Tahoe	47,415,300
North Yuba	48,207,900

*Reports on the Water Supplies of San Francisco, 1900 to 1908, p. 38.
†Reports on Water Supply of San Francisco, 1900-08, p. 128.

> Attention has been called in the report of July 28, 1902, to the fact that the construction of a water works system entirely independent of the water works which are now supplying the city . . . would not be productive of the best results . . . Crystal Springs and Lake Merced . . . should be made a part of the municipal system."*

It will thus be seen that from the very earliest conception of the Hetch Hetchy as a water supply it was to be in reality an auxiliary system for future needs; the important reservoirs of the Spring Valley Water Works to be acquired and used in connection with it. How much these would cost in addition to the Tuolumne project Grunsky states he could not determine at that time.

San Francisco was now ready to take action. It had had J. P. Lippincott for months in the mountains quietly making surveys. During all of the time the plans were being worked out by Grunsky and estimates made, the surveys were proceeding. Publicity had been avoided as far as possible, Grunsky saying in his report on this subject:

> "It was determined that all applications for water and reservoir sites should be made in the name of Mayor Phelan, because there were no provisions in the regulations issued under the Department of the Interior under which a municipality could file on a reservoir site . . . and for the further reason that the necessity of preparing and filing documents to establish the right of San Francisco to proceed in this matter might be obviated, thereby avoiding publicity that would otherwise have followed any authorization for such purpose by the Board of Supervisors."†

The cost of making of surveys and planning the works for the Tuolumne River project for municipal water supply, including a city distributing system, was about $40,000.

*Reports on Water Supply of San Francisco, 1900-08, p. 35.
†Reports on Water Supply, 1900-08, p. 39.

Regarding the avoidance of publicity, Manson, in replying to the statement of Secretary Hitchcock, said:

> "Authority to make these surveys was not asked of the Honorable Secretary for the reason that no requirement to this effect was found . . . Moreover it was essential to move circumspectly on the part of the city, in order to prevent private parties and corporations, speculatively inclined and more mobile than city authorities . . . from forestalling the city's action.
>
> The wisdom of this apparently surreptitious action has been made manifest by the rapid and universal filings on all reservoirs and water rights and purchase of holdings in Tuolumne River drainage basin since it became known that the city authorities looked to its waste flood waters as a source of supply."*

In April, 1902, James D. Phelan made his application to the Department of the Interior for rights of way and reservoir sites at Hetch Hetchy and Lake Eleanor. It will be noted that this was several months in advance of Grunsky's letter of July, 1902, in which he advised the acquiring of these rights by the municipality. The work had been done for Phelan in his private capacity as a citizen.

Mayor Phelan wrote the Board of Supervisors on February 20, 1903:

> "I herewith transmit to you an acknowledged assignment to the City and County of San Francisco all my right, title and interest in and to Reservoir Site No. 1 on the Tuolumne River, and of Reservoir Site No. 2, Lake Eleanor, Tuolumne County, California, arising out of my applications, or otherwise, made at the instance of the Board of Works in my individual name, but really for the benefit of the City and County of San Francisco."†

Whether the city would not have been happier with almost any one of the other sources, regardless of the additional cost, can now only be dealt with in the realms of speculation.

*Efforts to Obtain Water Supply, by Manson. Letter to President.
†Reports on Water Supply for San Francisco, 1900-08, p. 113.

The city had entered into the Federal domain. It placed itself in the position of being dictated to in many vital matters. Its affairs became the subject of governmental action at Washington. For fifteen years it had to fight to nail down the rights it had entered upon.

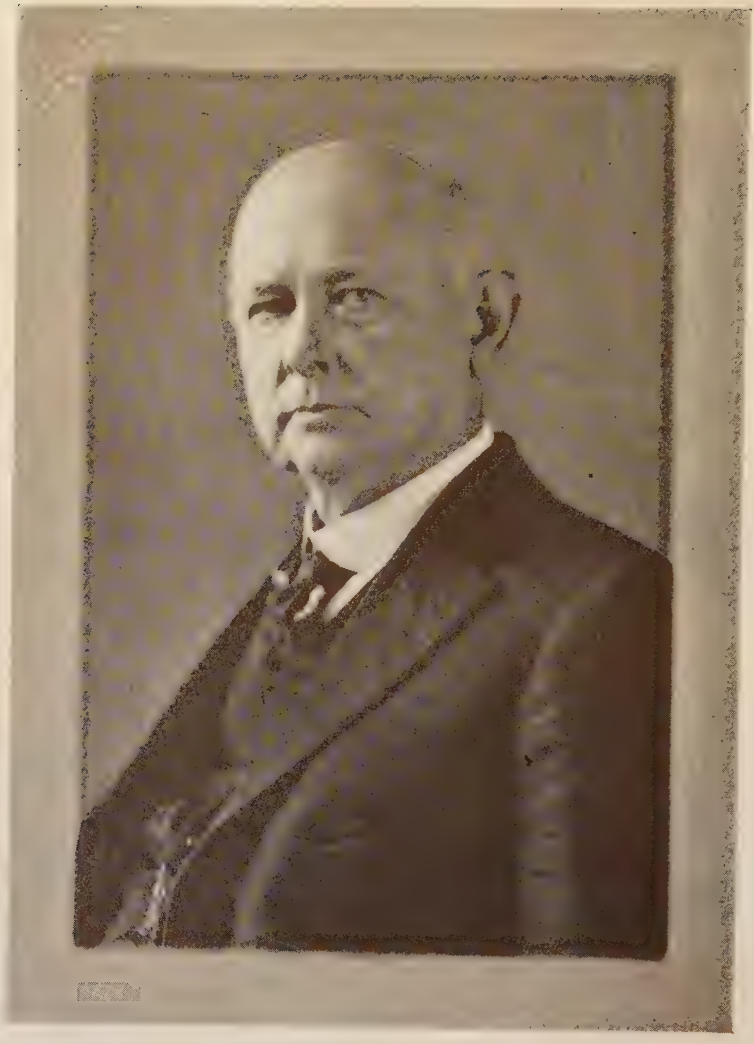
When finally it was granted such rights as it now has under the Raker Act, it was bound down and hampered with restrictions, penalties and monetary payments worded in ambiguous language which threaten ultimately to throw the whole subject open again to revision and more attacks.

On January 20, 1903, Secretary of the Interior, E. A. Hitchcock, wrote the United States Land Office at Stockton, California, as follows:

> "I have to state that upon careful consideration of this case the conclusion has been reached that it would not be expedient to accord favorable consideration to the applications presented by Mr. Phelan for the privilege in question in the Yosemite National Park and they are accordingly denied." *

The war with Secretaries of the Interior over these rights was now on. Hitchcock denied the city's requests twice; Garfield granted them; Ballinger modified them; Fisher questioned his right to make the grant permanent and finally Congress was appealed to.

*Efforts to Obtain Water Supply, by Manson, p. 5.



Marsden Manson VII.

OPPOSITION

MUNICIPALITIES LABOR UNDER MUCH disadvantage in such undertakings as San Francisco had embarked upon in her Hetch Hetchy project. They are open to all manner of attacks. Their movements are anticipated and often thwarted. Because they are municipalities and therefore impersonal entities, there is no compunction on the part of individuals to seek advantage over them.

San Francisco had gone into a wilderness for its water supply—into mountain fastnesses remote in the extreme. Describing this region City Engineer Grunsky said:

> "Much of it is inaccessible except to the bold mountain climber. Here and there it is sparsely timbered; it is dotted with crystal clear lakes; it is absolutely devoid of human life from November to May, except for the occasional wintering of an old settler at some such spot as Lake Eleanor. . . . All of this drainage basin is above an altitude of 5,000 feet."*

Miners had prospected the upper reaches of the river for gold for many years. George M. Harris, in his offer to the city previously set forth, said that he had known the river since 1849. Miners' ditches and flumes had secured doubtful prescriptive rights.

A description of one of these flumes is contained in the following article:

*Municipal Reports, 1900-01, p. 338. Appendix.

"Big Flume Falls—The big flume of the Golden Rock Ditch fell Thursday, the 9th inst., with a crash that was heard for miles. Being held on all sides by iron guys, it crashed right down on its foundations, leaving scarcely a beam erect—a vast heap of broken and rotten timbers. Just previous to the fall a break had occurred in the ditch above, which necessarily turned the water out of the flume. When it was again turned in the increased weight coming upon the dry and absorbent timber brought on the collapse.

The crashing timbers, cables and guys, together with the air current created by the fall, carried everything in their course, stripping the large pines adjacent and crushing to atoms the smaller growth.

The flume was the most magnificent in the state. It was designed by G. W. Holt and erected by Holt & Conrad in 1859 under contract with the Golden Rock Water Company at a cost of $80,000. The water first passed through it to Big Oak Flat on the 20th of March, 1860. It was built almost exclusively of sugar pine and was 2,200 feet in length. The box was 26 inches square in the clear; thirty inches outside, with 50 feet fall, with a spare fall of 30 feet more, making a full total fall or head of 80 feet. Its estimated capacity was 3,000 inches of water.

The flume was supported by eleven towers, two of which were 266 feet high, while the flume box rested at a height of 250 feet. The base of each tower was 50 feet square, with timbers 20 inches square. It was a work most creditable to its projector and it stood more than the time specified by its designer. He said that the life of a wooden superstructure of that kind was seven to eight years, but that with great care this one would stand a year or two in excess of that time.

The Golden Rock Water Company takes the water out of the Middle fork of the Tuolumne river above Big Meadows and by means of a ditch throws it into the South Fork of the Tuolumne, from which it is taken out at a dam near Hardin's mill and

conveyed by ditch over 38 miles long through both Garrotes to Big Oak Flat: thence it extends to Maxwell's Creek, Pino Blanco and surrounding country, furnishing water to Coulterville and even to Horse Shoe Bend on the Merced River, commanding as well vast territory along the route.

The diameter of the ditch at its head is 9 feet at the top and 6 feet at the bottom; depth, 30 inches; fall 8 feet to the mile. At present its main subsidiary ditches are 100 miles in length and cost $250,000. The fallen flume will probably be replaced by iron pipe, which it is claimed can be strung across the gap for $8,000."*

The amazing height of these wooden towers is a wonder to modern engineers. They were higher than any 20-story office building of today. And higher than the highest of the steel electric towers seen throughout the country.

Engineers avoid the use of high trestles now by the use of inverted syphons. The miners either did not understand their use or had not piping sufficiently strong to withstand the tremendous water pressure, but like the Romans of centuries ago carried their aqueducts across ravines on high towers.

In a volume by Robert M. Searls, special counsel for the Hetch Hetchy project, entitled "San Francisco's Water Rights on the Tuolumne River," he says:

"Some years ago the City Attorney had an abstract prepared showing all of the water filings which ever had been made on the upper reaches of the Tuolumne River and recorded in the County Recorder's office at Sonora. The list fills a large volume, but as to all except those owned by San Francisco, nothing remains save the record of the notice.

Appropriations dating back to the 50's were made for placer mining purposes, agricultural purposes and for purely speculative purposes by various locators, some in Hetch Hetchy Valley, some on Cherry River, and some on the Main Tuolumne, but of those appropriations not even a posted notice remains. No move was

*Union Democrat, Sonora, July, 1868.

> ever made to get Federal permits; no development work was ever done. They may therefore be dismissed from consideration without further comment."*

With no valid claims above her, with no desire to interfere with the natural flow of the Tuolumne River it was not believed that any serious objections could be made to her movements from those below. San Francisco was only proposing to erect a dam and store the waste flood waters, that in the early summer months rush down the Tuolumne gorge causing disastrous floods in the lowlands and go to waste into San Francisco Bay.

There were, however, three irrigation districts in the San Joaquin Valley that became insistent objectors to the city's plans. And, as soon as the city's moves in the mountains were discovered others immediately began making filings. A portion of these rights alone, later on, cost the city over $1,000,000.

The earliest irrigation district was the Waterford District. It succeeded to rights secured from the La Grange Ditch Company, located October 19, 1872. Its appropriations were not large and it was conceded to have a priority to all other rights on the lower river.

The Modesto and Turlock Irrigation Districts had much larger ambitions. According to the Searls memorandum under the heading of "Modesto and Turlock Irrigation Districts" filings were made by Michael Kelly, M. A. Wheaton and others on May 18, 1872. They located 500,000 miner's inches. By a deed of August 15, 1890, their water rights were sold to the Modesto and Turlock Irrigation Districts for $35,000. To these were subsequently added other appropriations made by the Districts themselves.

As soon as the City of San Francisco was involved in trouble with the Federal authorities over securing rights of way through the Federal forest reserves and the Yosemite National Park they all entered their protests.

City Engineer Thomas P. Woodward, who had succeeded Grunsky in the early part of 1904, said in regard to these districts:

*S. F. Water Rights on the Tuolumne River, p. 61.

"The people of the Modesto and Turlock Irrigation Districts claim for their own uses all of the water, flood and otherwise, of the Tuolumne River. They utterly disregard the fact that San Francisco did not propose to take from the Tuolumne River any of the natural flow of water.

They refuse to even consult with a special committee from San Francisco appointed by the board of supervisors to secure united action. 'There was nothing to consult about,' they said. Feeling ran high in the country and if even one of their people ventured to suggest that San Francisco might take these flood waters without injury to their rights, he was in danger of personal ostracism.

They were like the dog in the manger, they could not use the water themselves and they intended to do the best they could to prevent any one else using it." *

According to a memorandum by Chas. H. Lee the three districts comprised a total of 276,783 acres, of which 244,190 were irrigable. The acreage in each of these districts is given as follows:

	Total Acreage	Irrgable Acreage
Waterford	14,110	10,550
Modesto	81,183	70,300
Turlock	181,490	163,340

Regarding the total amount of water required for all of this land Searls says:

"Up to the time that the last of the city's appropriations had been made, the combined capacity of the Modesto and Turlock Irrigation District canals did not exceed 2350 second feet. . . . The combined maximum diversion during any year up to 1915 did not exceed 2250 second feet." (2250 cubic feet a second.)†

All of this water the city had conceded as their legal priority. But later on both districts endeavored to enlarge their canals.

Following closely upon the moves of the city filings were made by the

*Municipal Reports, 1903-04, p. 340.
†S. F. Water Rights on the Tuolumne River, p. 73.

National Park Electric Company on the Tuolumne River. These filings were subsequently transferred to the National Park Electric Power Company. Later on the requests for right of way, originally granted by the Forest Bureau to the company, were revoked for failure to perform any development work. Litigation was commenced, but the suits were finally dismissed for lack of prosecution.

Through certain deeds obtained from A. J. Blackwell, Ben M. Maddox and Wm. H. Hooker, the Yosemite Power Company acquired certain rights on the main Tuolumne River. The company also acquired 80 acres of patented land lying within the Poopenaut Valley, just below the site that had been selected for the Hetch Hetchy Valley dam. This company made it embarrassing for the city for a number of years, but its rights were finally condemned through legal action and its properties became vested in the city.

To the list of those interested in thwarting the city's moves must be added the Spring Valley Water Works, whose main interest was in protecting the value of its properties. The power companies had paper plans for developments that criss-crossed the city's rights. Their opposition was actively maintained for a number of years. And in addition to these were the irrigation districts.

"The dog in the manger policy" was resented by P. J. Hazen, one of the earlier attorneys for the irrigationists. While at that time there were no plans for materially increasing the size of their districts, the time might come. Hazen desired the government to retain possession of the Hetch Hetchy and divide the water later on among those who might beneficially use it.

The formation of the Turlock and Modesto Districts had encountered many obstacles and annoying delays. At times it seemed that the plan would fail. The difficulties were comparable with those of the annals of the Hetch Hetchy project now being recited. The people of Stanislaus are proud of their achievement. Sol P. Elias says:

"More romantic than imaginative fiction and fully as interesting as any other achievement of Stanislaus in the realm of civic or agricultural progress is the story of the development of the irrigation movement in this county."*

According to Elias the name of river and county came from the Indian name of Estanislao, an Indian chieftain, who, after several years of religious life and training under Father Buenaventura at the Mission San Jose, fled from the quiet environment of the Spanish padres and returned to the wild existence of his early youth. He became a bandit, rivaling the exploits of Joaquin Murieta and Tiburcio Vasquez.

He made his headquarters at the junction of the Stanislaus and San Joaquin Rivers. For many years he was able to maintain his stand on the Rio Estanislao. While the exact location is not known it is believed to have been near the town now known as Salida.

*Stories of Stanislaus, p. 11.

SELECT BAY CITIES PROJECT

PERHAPS ONE OF THE MOST SERIOUS obstacles to efficient governmental action is the constant change of administration. The aims and desires of one party are often of no interest to the succeeding one. Little political advantage comes from pushing to completion a project begun by some one else. This frequent changing of officials, with a consequent lack of continuity of aims and desires, results in delays, losses both in time and money, and often in the entire abandonment of worthy and necessary projects.

The selection of the Hetch Hetchy Valley and main Tuolumne River for the city's future water supply had been made during the administration of James D. Phelan, immediately following the adoption of the Charter in 1900. Colonel George A. Mendell and Marsden Manson, both engineers, with C. E. Grunsky, their appointee as City Engineer, were primarily responsible for that selection.

E. E. Schmitz followed Phelan as Mayor in 1902. That same year Colonel Mendell died, and the Board of Public Works was reorganized with Michael Casey, Herbert L. Schmitz and Marsden Manson as members. The next year, however, Manson failed of reappointment, F. A. Masstretti taking his place. Grunsky was succeeded as City Engineer by Thomas P. Woodward.

In less than four years all of the men who were intimately associated and

RESOLUTION NO. 6949

WHEREAS, THE INADEQUACY OF THE PRESENT WATER SUPPLY SYSTEM of the City, the ever increasing demand for water, the constantly augmenting price of available water sources and the constantly diminishing possibility of securing such supplies, due to other uses and appropriations, make it absolutely imperative that a municipal water supply be at once acquired; and

WHEREAS, the City has expended thousands upon thousands of dollars in tentative efforts to secure the Tuolumne or Hetch-Hetchy system, but from the history of the proceedings already taken, as well as from a letter just received by the City Engineer from Congressman J. C. Needham, it is apparent that said Tuolumne supply cannot be acquired for years to come, if at all, and probably not at all; and

WHEREAS, To continue vainly in this direction will only aid the Spring Valley Water Company to prolong its grasp on the people of San Francisco and will in the end cost the city millions of dollars in increased cost of the municipal water supply which must eventually be acquired, as well as in continued payments of exaggerated water rates to the present supply company; and

WHEREAS, No greater advantage can accrue to the city than the immediate acquisition of a sufficient supply of pure fresh water, all of which facts have been forcefully and succinctly presented to this Board in the third inaugural address of his Honor Mayor Eugene E. Schmitz, whose statements and declarations in said address on this subject this Board hereby unqualifiedly indorses and hereby expressly adopts: therefore be it

RESOLVED, That the City refrain from expending further money, energy or time in the futile attempt to acquire the so-called Tuolumne system; that the Committee on Water and Water Rates of this Board, in conjunction with the chairman of the Finance Committee and the chairman of the Committee on Public Utilities, be and they are hereby appointed a special committee with direction and instructions to proceed at once to investigate other available and adequate sources of supply of pure water from the Sierra Nevada mountains and to report upon the same to this Board at the earliest possible time in order that steps may be taken tending toward their acquisition if they be found accessible, sufficient and available. And the City Engineer is hereby directed to place at the disposal of said committee all data and information in his possession relative to such or any sources of proposed supply.

And the Clerk is hereby directed to advertise this Resolution in the Evening Post Newspaper.

In Board of Supervisors, San Francisco, January 29, 1906.

Adopted by the following vote:

Ayes- Supervisors Boxton, Coffey, Coleman, Davis, Duffey, Furey, Gallagher, Harrigan, Kelly, Lonergan, Mamlock, McGushin, Nicholas, Phillips, Rea, Sanderson, Walsh, Wilson.

GEO. B. KEANE, Clerk.

Approved, San Francisco, February 3, 1906.

E. E. SCHMITZ,

Mayor and ex-officio President of the Board of Supervisors.

PLATE VIII

Supervisors abandon Hetch Hetchy. "Resolved, that the city refrain from expending further money, energy or time in the futile attempt to acquire the so-called Tuolumne system."

responsible for the Hetch Hetchy project were no longer in office. The active interest of these men and the intricate knowledge acquired by them was lost to the city. And Woodward, surrounded with men who were practically strangers to the scheme, wrote in his report for 1903-04:

> "After all the years of endeavor, the thousands of dollars spent, the engaging of special engineers, the work in the field and in the office, the visits to Washington, the memorial to Congress, it would seem that the acquisition of water rights on the Tuolumne River as a source of supply for municipal water works is farther away than it was hoped when the subject was first contemplated."*

The storm broke over the Hetch Hetchy project with the fury of a hurricane in the early part of 1906. A petition had been filed with the supervisors by from 1200 to 1300 land owners in the Modesto and Turlock Irrigation Districts to abandon the Hetch Hetchy project and in February the Board of Supervisors adopted Resolution 6949 formally abandoning the Hetch Hetchy, on the general ground of its being illusory. Immediately following the great fire of that year the water question became one of supreme importance.

The Spring Valley Water Company's system had been seriously impaired and an assessment of $3 a share had been levied and $840,000 collected by this means to repair the damage. The company's revenues had been greatly depleted. The supervisors reduced the water rates, making the situation even more critical for the company. When the company continued to collect the former rates its franchises were forfeited.

Through a citizens committee known as the Federated Water Committee, of which Colonel W. H. Heuer, U. S. A., was chairman, recommended the purchase of the Spring Valley Water Company.†

Heuer and his committee made the following recommendation:

> "We recommend that at the best figure obtainable the city au-

*Municipal Reports, 1903-04, p. 340.
†Heuer Report to Federated Water Committee, p. 5.

RESOLUTION NO. 812
(New Series)

WHEREAS, the Spring Valley Water Company has persisted, in defiance of law, in collecting water rates in excess of those established by the Board of Supervisors under and pursuant to Ordinance No. 1775, entitled, "Regulating the monthly rates of compensation to be collected by any person, company or corporation engaged in the business of supplying water to the inhabitants of the City and County of San Francisco for family use, for private purposes, for municipal uses and all public purposes of said City and County for the year commencing July 1, 1906, and ending June 30, 1907," passed March 19, 1906, and approved March 20, 1906; and

WHEREAS, the constitution of the State of California (Section 1, Article XIV) expressly provides that any person, company or corporation collecting water rates in any city and county, or city or town in this State, otherwise than as established under the authority granted by the constitution, shall forfeit the franchise and water works of such person, company or corporation to the city and county, or city or town, where the same are collected, for the public use; and

WHEREAS, in the investigation held before the Board of Supervisors, preliminary to establishing water rates for the year commencing July 1, 1907, the Spring Valley Water Company, through its duly accredited officials, testified under oath that said company was still collecting and is now collecting rates under the ordinance of the Board of Supervisors passed and approved in the year 1902, in contravention of those established by the Board of Supervisors in the year 1906, as aforesaid; now, therefore, be it

RESOLVED, That the Board of Supervisors of the City and County of San Francisco declare, and it hereby does declare that the Spring Valley Water Company has violated both the letter and the spirit of Section 1 of Article XIV, of the constitution of the State of California, in refusing to obey the mandate of the Board of Supervisors by persisting in exacting and collecting in defiance of law, water rates in excess of those established by said Ordinance No. 1775, approved March 20, 1906; and further, that said Board of Supervisors hereby declares all franchises and water works of said Spring Valley Water Company forfeited for public use, to the City and County of San Francisco, a municipal corporation.

And the Clerk is hereby directed to advertise this Resolution in the Evening Post Newspaper.

In Board of Supervisors, San Francisco, February 28, 1907.

Adopted by the following vote:

Ayes-- Supervisors Coffey, Coleman, Davis, Furey, Harrigan, Kelly, Lonegran, Mamlock, McGushin, Nicholas, O'Neill, Phillips, Tveitmoe.

Excused from voting -- Supervisors Boxton, Gallagher, Rea, Walsh.

Absent -- Supervisor Sanderson.

JOHN H. RYAN, Clerk.

Note -- The foregoing Resolution was rescinded by the Board of Supervisors appointed by Mayor E. R Taylor by the following vote adopted August 19, 1907:

RESOLVED, That Resolution No. 812 (New Series), forfeiting the franchise and water works of the Spring Valley Water Company in effect March 12th, 1907, be and the same is hereby repealed.

Ayes -- Supervisors Booth, Brandenstein, Brenner, Canter, D'Ancona, Faymonville, Molera, Murdock, Murphy, Payot, Rixford, Sachs, Stafford, Sullivan 14.

Noes -- Supervisors O'Neill -- 1.

Absent -- Supervisors Magee, McGushin, Tveitmoe. 3.

PLATE IX.

Schmitz Board of Supervisors forfeits the franchises and water works of the Spring Valley Water Company. Taylor board rescinds the action.

thorities, by negotiation, agree upon a price with the Spring Valley Water Company, for all of such portions of said property as may be desired and at that price an option to purchase for five years be immediately secured, and that thereafter a bond election be ordered by which the citizens may have an opportunity to vote."*

Disregarding this recommendation, the supervisors called for a submission of new proposals to furnish the city with water. On June 21, 1906, eleven proposals were submitted. In discussing these, the supervisors' committee on water supply, consisting of Supervisors Jennings Phillips, Jas. F. Kelly, E. J. Walsh, Chas. Boxton and Jas. L. Gallagher, said:

"The necessity for the acquisition of a municipal water supply is more urgent at the present period than ever before in the city's history. It has become almost axiomatic that if the city had proceeded with diligence . . . our city would not now be in ruins. The procrastination and delays . . . have been attributed to many causes . . . some of which may be well to mention:

(a) Active opposition by the existing water monopoly of San Francisco.

(b) Obstinacy of certain municipal officials in favor of a single pet idea.

(c) The frequent changes of municipal officials, by reason whereof continuity of consideration and action could not be had."†

Following the recommendation of its committee the Board of Supervisors selected the following five proposals from the list of eleven submitted:

1. Russell L. Dunn (North Fork American River).
2. Orrin S. Henderson (Middle Fork American River).
3. William Muir (North Fork American River).
4. Bay Cities Water Co. (South Fork American River and North Fork Consumnes River).

*Heuer Report to Federated Water Committee, p. 12.
†Journal of Proceedings, Board of Supervisors, Vol. 1, 1906, p. 161.

5. Sierra Nevada Water & Power Company (Mokelumne River).

On July 30, 1906, Mayor E. E. Schmitz appointed Major C. H. McKinstry, Professor C. D. Marx and A. M. Hunt as a Board of Engineers to make a recommendation. Upon learning, however, that the engineers said that it would require at least a year to make the study the committee on water supply selected the Bay Cities Water Company's proposal to sell its system to the city for $10,500,000.

The board of engineers thereupon resigned, stating that as the supervisors had made their own selection there was nothing left for them to do.

Attacks were made in the press against the Board of Supervisors for their action. On October 8, 1906, Wm. S. Tevis appeared before the supervisors, as president of the Bay Cities Water Company, and said:

> "I wish to state in the most positive language which is capable of expressing thought, that never have I, or anyone in my company, been approached by any person, official or private individual seeking any compensation, fixed or contingent, with relation to the water proposition. . . .
>
> And when Mr. James D. Phelan, ex-Mayor of San Francisco, or the disreputable *Evening Bulletin* makes any statements to the contrary, I say, with the fullest appreciation of the import and responsibility of my words, that they have deliberately lied. . . .
>
> Of all the sources submitted, I confidently assert that the one submitted by the Bay Cities Water Company more nearly approaches ideal perfection . . . than any other source, including the illusory Tuolumne or Hetch Hetchy supply of whose visionary virtues Mr. Phelan and his associates have been so enamored.
>
> These men, who for ten years have kept the city on the 'waiting list' by their obstinacy in this direction may be safely accused of being largely responsible for the destruction of the greater part of our fair city."*

*Journal of Proceedings, Board of Supervisors, Vol. 1, 1906, p. 200.

Boodlers Cannot Hide Behind Shield of Abuse

LIAR (the Tevis definition)—Any man who thinks that a crooked Board of Supervisors would not give Mr. Tevis $10,500,000 for a $400,000 piece of property without asking any bribe money.

HOODLUM (the Gallagher definition)—A man who undertakes to stop the paying out of $10,500,000 of the people's money for a water supply, and insists upon a better one being accepted by the city which would cost nothing.

EX-MAYOR PHELAN and those who, with him, have opposed the Bay Cities water supply scheme were branded as liars yesterday by Acting Mayor Gallagher and Mr. Will Tevis.

This is precisely what might be expected from men who ought to be looking after their personal safety rather than indulging in vituperation and flaying citizens who have the courage to stand for the rights of the people.

Mr. Will Tevis will have difficulty in making the public believe that a scheme to sell a water supply system which cost four hundred thousand dollars for ten and a half millions can be put through without bribery. He cannot explain with satisfaction to the public why the Tuolumne system, which could have been had for nothing, was set aside for the sake of a favorable consideration of the Bay Cities water system, which will cost millions. Nothing is gained in mud-throwing and in hurling abuse scraped from the gutters of the administration. It would be far more polite for these "gentlemen" who have shown their venom against those who have dared to express a different opinion and, who have dared to point out that the whole Bay Cities water scheme is a bit of polite robbery, to look after the color of their garments, that, presto, change, they are not suddenly transformed from broadcloth to stripes.

By the action of the Supervisors yesterday the people are once more made the victims of a clear exhibition of graft, which no definition of a liar and a gentleman can conceal. The remarkable exhibition in the Board of Supervisors of gutter eloquence must not be permitted to shift the emphasis from the main point, viz., the fact that the city is not getting the cheapest and the best possible water supply, but that the Hetch-Hetchy system has been rejected for reasons that ought to be the ground for swift punishment of the men who have bunkoed the people.

PLATE X.

Jas. D. Phelan and the Bulletin engage in a bitter controversy with Wm. S. Tevis and the Schmitz administration over Bay Cities project.

Mayor E. E. Schmitz, by a series of questions put to Tevis, then developed the general line of objections against further consideration of the Hetch Hetchy project:

> "The Mayor: As you have information appertaining to that subject, would you kindly tell us what would come to us if we purchased that (the Tuolumne) system?
>
> Mr. Tevis: Absolutely nothing, excepting a reservoir site where water might be stored—the Hetch Hetchy Valley. That is one thing. Another necessity would be the site called the Lake Eleanor, bordered by privately owned lands, that would have to be bought before you could utilize them.
>
> The Mayor: You have probably noticed in the reports coming through the press, that we could get the Hetch Hetchy system for nothing. What truth is in that statement?
>
> Mr. Tevis: Absolutely none.
>
> The Mayor: What would we get free if we went after that system?
>
> Mr. Tevis: Simply the right to store water in one site.
>
> The Mayor: Anything more? The right to use the water?
>
> Mr. Tevis: Nothing more.
>
> The Mayor: Could the right to the reservoir site ever be revoked?
>
> Mr. Tevis: Undoubtedly, at any time."*

In a supplemental report in their own defense the special committee on water supply submitted a report, the opening paragraph of which read:

> "In view of certain false and malicious comments made by ex-Mayor James D. Phelan and his kept evening newspaper, on the action of this Board relative to a proposed Municipal Water Supply, your special committee deems it advisable to file a supplemental report."†

*Journal of Proceedings, Board of Supervisors, 1906, Vol. 1, p. 292.
†Journal of Proceedings, Board of Supervisors, 1906, Vol. 1, p. 293.

In which it said:

> "The present Board of Supervisors, in view of the facts, would in all probability have abandoned the Tuolumne project, even had a permit from the Secretary been granted."*

Having decided in favor of the Bay Cities project, the Board of Supervisors on December 13, 1906, appointed City Engineer Thos. P. Woodward and J. R. Price as engineers to make a report on the properties of that company.

Before Woodward and Price could make their report, the graft prosecution burst like a bombshell on the city. Within a few months the Mayor had been removed, sixteen members of the Board of Supervisors had handed in their resignations and new men had been appointed in their stead.

*Journal of Proceedings, Board of Supervisors, 1906, Vol. 1, p. 298.

REPRIEVE FOR TUOLUMNE

MANY OF THE MOST NOTEWORTHY accomplishments in every municipality are directly traceable to the energy, enthusiasm and persistence of an individual or group of individuals. When such people conceive an idea and become convinced of its wisdom, they strive to bring about its attainment.

Then comes the period of growth—very much like the growth of a plant. The energy behind the idea or in the kernel of the seedling makes its way through the yielding substances that surround it. Sometimes the growth is delayed through adverse conditions, but little by little these give way to the force that is being exerted until it gains daylight and destiny.

Marsden Manson was out of office, but he never once stopped working for the Hetch Hetchy. He and Grunsky were primarily responsible for its selection as a water supply. Colonel Mendell, while conversant with practically all of the water supplies that had been before the city for years, according to Manson never personally visited the Hetch Hetchy Valley. He relied on the others and concurred in their plans. Mayor Phelan cooperated.

Manson says that they personally paid the money out of their own pockets to employ J. P. Lippincott to go to Lake Eleanor and Hetch Hetchy Valley in 1900, and make the necessary surveys and filings, in order that it might be done quietly.

"If we had attempted to put an appropriation through the Board of Supervisors for this purpose," said Manson, "the cat would have been out of the bag. So we paid the expenses ourselves."

Manson was out of office from 1904 to 1908. In 1905, however, we find him in Washington where he gained an interview with President Theodore Roosevelt. He was shown the letters signed by Secretary E. A. Hitchcock giving his reasons for denying the city's request, which were on the ground that he had no authority and that he believed it to be inadvisable. Manson was given permission by the President to file a brief in reply, in which he said in part:

"In June, 1905, the City and County Attorney commissioned the undersigned to again request the President's attention to the pressing needs of San Francisco for an additional water supply, and on the 23d of that month I was accorded the honor of a hearing. You then placed in my hands the letters from the Honorable Secretaries of the Interior and of Commerce and Labor."

Manson then renewed the city's request for the rights it desired, and in his conclusion on July 27, 1905, said:

"It is maintained on the part of San Francisco:

1. That the waste flood waters of Tuolumne River, constitute the purest, most abundant and most available source of domestic supply.

2. That these waste flood waters are in excess of any possible future use.

3. That the law of February 15, 1901, provides the authority and power necessary to grant the use of storage areas in National Parks in California, and such modifications of natural conditions within these park areas as may be necessary to carry out the provisions of said law.

It is asked on behalf of San Francisco that the reservoir rights of way petitioned for be granted.*

*Efforts to Obtain a Water Supply from Tuolumne. Manson, p. 7.

As the result of the representations made to him by City Attorney Franklin K. Lane, Marsden Manson and later by City Attorney Percy V. Long, who succeeded Lane, President Roosevelt requested an opinion from Attorney-General M. D. Purdy, as to whether the subject could be reopened and the rights asked for by the city be granted. Purdy, in reply to the President's request, said in his letter:

> "I have carefully considered the language of the Act as above quoted and am clearly of the opinion that Congress thereby intended to vest in the Secretary a discretionary authority to grant or refuse applications of this kind.
>
> I would therefore respectfully suggest that, if you desire further consideration or different action, the matter may be taken up with the Secretary of the Interior."*

Regarding this opinion Manson says:

> "No notice, so far as the writer is aware, was furnished to the city or its advocates of this letter until it was unearthed by James C. Hooe, of Washington, at the request of Hon. James D. Phelan, during April, 1906. . . ."

In the meantime the Board of Supervisors had passed Resolution No. 6949, which practically abandoned the Tuolumne River as a water supply. Manson says:

> "This was at once seized upon by Mr. J. C. Needham, Congressman from the Sixth District of California, who represented to the Secretary of the Interior that Resolution No. 6949 was an abandonment of San Francisco's rights under the application of 1902."†

Following these events there was a change in President Roosevelt's Cabinet. James Rudolph Garfield succeeded E. A. Hitchcock as Secretary of the Interior. While on a tour of the West, Garfield fixed a date for a rehearing

*Efforts to Obtain a Water Supply for San Francisco from Tuolumne River. Manson. (PurdyLetter).
†Same booklet, p. 119.

of the city's request for the rights desired at Lake Eleanor and Hetch Hetchy. The meeting was held in the supervisors' old chambers at No. 32 Eddy Street, San Francisco, from 8:40 to 11:30 on the evening of July 27, 1907. Those who participated in the hearing were:

Mayor E. R. Taylor, James D. Phelan, Marsden Manson, Dr. A. A. D'Ancona, D. J. Galloway, L. L. Dennett, P. J. Hazen, A. C. Boyle, Russell L. Dunn, C. N. Beal, John E. Bennett, James Rudolph Garfield.

Manson was asked by Mayor Taylor to make the presentation on behalf of the city. He was still out of office and his right to appear for the city was challenged in the following manner:

> A voice from the audience: "My name is P. J. Hazen. I represent the Turlock Irrigation District, and I ask by what authority Mr. Manson represents the City of San Francisco?"*

This brought up a discussion of the effect of Resolution No. 6949, abandoning the Tuolumne as a water supply, and Mayor Taylor said:

> "I will read this communication, Mr. Secretary:
>
> 'New Hall of Justice, Office of Board of Supervisors,
> 32 Eddy Street, San Francisco, Cal.
> July 23, 1907.
>
> Honorable Edward R. Taylor, Mayor:
>
> I have the honor to transmit to you a copy of Resolution No. 1170 (New Series) of the Board of Supervisors, adopted at a meeting of said Board held July 22, 1907, wherein and whereby you are requested to represent the supervisors at a hearing before the Secretary of the Interior in the matter of the application of San Francisco for reservoir rights of way in the Hetch Hetchy Valley.
>
> Resolution No. 1170 (New Series): Whereas, Secretary of the Interior James R. Garfield has granted a rehearing in the matter of the application of the City and County of San Francisco for reservoir rights of way in the Hetch Hetchy Valley, to be held in

*Reports on Water Supplies, 1900-08, p. 152.

this city on Wednesday evening, July 24, 1907, at 8:30 P.M.; and

Whereas, Resolution No. 6949 of this Board, declaring in its opinion that this source of water supply was unavailable, was based upon the adverse action of former Secretary of the Interior Hitchcock;

Resolved, Therefore, That Resolution No. 6949 of this Board be and it is hereby repealed; that the chambers of the Board of Supervisors be placed at the disposal of Secretary Garfield, and that His Honor, Mayor Taylor, be requested to represent this Board at said meeting.'"

Manson then said:

"Mr. Mayor, if you will permit me, at the time the first resolution mentioned, 6949, was passed, the entire matter was in the hands of the then city and county attorney. Authorized by him, the matter was placed in my hands to appear at Washington and to present the brief here presented. . . . Acting under that, the Mayor requested me to lay the matter before the Secretary."

The hearing then proceeded. Irrigationists and those who had other water sources to offer addressed the Secretary. Later on they were allowed to file briefs. As the result of the hearing Secretary Garfield, on May 11, 1908, granted the city the rights it desired, with the stipulation, however, that Lake Eleanor should be utilized first and the Hetch Hetchy Valley reserved for later development.

Thus was sown the seed for further controversy.

A few months after the Garfield decision L. L. Dennett, attorney for the Modesto Irrigation District, wrote to City Engineer Manson under date of September 25, 1908, in part as follows:

"I think it only fair that you should understand our attitude in this matter. . . . I believe that as a whole, the settlement was eminently fair to all interests concerned . . . and that no unfair advantage was given to either side."*

*Journal of Proceedings, 1908, p. 865.

THE GARFIELD DECISION

THE GARFIELD DECISION WAS HERalded as a great victory. The city had at least the earnest of a great water supply. After fifty years of deferred hope she saw herself coming into her own. It was a long step in advance of the two rebuffs the city had sustained at the hands of Secretary Hitchcock even though it was loaded down with onerous conditions. After a list of nine stipulations Garfield signed his name to a document granting the city the rights it desired with one exception.

She was not to touch the Hetch Hetchy Valley until Lake Eleanor had been fully developed. Hetch Hetchy had been practically cut out of the scheme. It was a provision of far greater import than was realized by those who participated in the matter.

Manson went into office in 1908 as City Engineer. He immediately set to work to develop the project with such modifications as the Garfield permit imposed. To summarize briefly they were:

1. The city was to purchase all the land in private ownership in the Yosemite National Park in proximity to Hetch Hetchy and trade it acre for acre for land the government owned in the floor of the Hetch Hetchy Valley.

2. All National Park regulations in force would apply equally to the holdings acquired by the municipality.

3. The City and County of San Francisco agreed to develop the Lake Eleanor site to its full capacity before beginning the development of the Hetch Hetchy.

4. Any other city should have the right to join with San Francisco in the project.

5. The city must not interfere with the storage waters desired by the Modesto and Turlock Irrigation Districts.

6. The city must sell to the irrigation districts any excess of electric energy desired by the irrigationists for pumping water.

7. The city must agree that the Secretary of the Interior should have the right to direct the apportionment of and measurement of water if any disagreement arose between the city and the irrigationists.

8. When work on the Hetch Hetchy was begun the city must build a dam at least 150 feet in height. When there was sufficient water on hand any excess should be liberated for the use of the irrigationists at cost.

9. Within two years after the grant had been given the city was to submit the question of the water supply to a vote of the people.

In regard to this final stipulation Garfield said:

> "By granting the application opportunity will be given the city by obtaining the necessary two-thirds majority vote, to demonstrate the practical question as to whether this is the water supply desired and needed by the residents of San Francisco."*

Two things Manson considered of immediate concern. The first was to see what shape the city's rights were in. Nearly seven years had elapsed since the original Phelan filings. With the denial of the permits by Secretary of the Interior Hitchcock work had been practically stopped and after the resolution passed by the Board of Supervisors in 1906 no money had been spent to keep alive the earlier filings.

The second was to recommend, on July 23, 1908, the calling of a small

*Pamphlet of Proceedings before the Secretary of the Interior, 1910, p. 6.

bond issue to carry out the stipulations regarding the purchase of the lands in private hands, also to secure the necessary two-thirds vote of the people affirmatively for the project.

On the first day of October, 1908, he sent Drenzy A. Jones, Leslie W. Stocker and L. R. Mercado, engineers in his office, to make original filings in Manson's name at Lake Eleanor, the Hetch Hetchy Valley and on the Tuolumne River. Notices were posted that the water was claimed for irrigation, manufacturing, water power and domestic use in Manson's name. And on October 22, 1908, he transferred his rights to the City and County of San Francisco for the sum of $1. He was doubtful of the validity of the Phelan filings and had the work done over again to make certain of the necessary appropriations for water under the State laws.

In his recommendation to the Board of Works under date of July 23, 1908, Manson says:

> "There are two essential conditions fixed under this grant which must be complied with to make it of effect in giving this city the extremely valuable rights designated therein; namely, stipulations 1 and 9. Under the first of these conditions, the city must perfect its acquisition of ownership, and under the other condition, No. 9, the city authorities must submit to popular vote within two years after the date of grant the acceptance or rejection thereof.
>
> The sooner this can be done the better, as it gives the electors of this city an opportunity to say whether they want this source of water supply or whether they prefer the existing conditions with its risks, entanglements, endless litigation and annual rate fixing. If they, the people, desire to accept the source now open to them, they are entitled to an opportunity to say so."*

Manson thereupon recommended that a bond election be called to vote bonds to the extent of $750,000 which he explained would be sufficient to purchase the lands in and about Lake Eleanor and the Hetch Hetchy Valley.

*Reports on Water Supply, 1900-08, p. 99.

A leaflet was published by the Board of Supervisors giving a general outline of the water situation and the purpose of the bond issue. The money was to be spent as follows:

ESTIMATE OF COST FOR RIGHTS AND LANDS NOW NECESSARY TO ACQUIRE FOR A SIERRA WATER SUPPLY

For purchase of lands in and adjacent to the Hetch Hetchy reservoir . .	$165,000
Contingencies, fees, etc.	20,000
For purchase or condemnation of lands for right of way for canals, power and pumping stations, reservoirs, Lake Eleanor lands, etc. . . .	465,000
Contingencies, fees, etc.	100,000
	$750,000

According to Manson's recommendation a special bond election was called by the Board of Supervisors for Thursday, November 12, 1908. The amount of the issue was cut from $750,000 to $600,000. It was said that the additional $150,000 could be appropriated out of the general fund in case it were needed.

Two propositions were submitted to the voters. The first one would mean that the voter desired to acquire the Sierra supply. The second was the authorization of the bond issue.

One of the statements made to the voters was as follows:

> "The policy of the Board of Supervisors, so far as the same can now be determined, is to acquire at once a perfect title to the *Source of Supply* . . . . There will be no call upon the voters for a further debt until such time as it becomes apparent that an agreement can be had by which the city can purchase the existing works, or that such agreement is impossible."

Photographs of Lake Eleanor and Hetch Hetchy were shown and on the final page was this appeal:

APPEAL TO VOTERS

> "The attention of the voters is called to the fact that, after nearly forty years of agitation of the question of acquiring a mu-

nicipal water supply for San Francisco, the present is the first opportunity that the voters have had to express their views in this connection. It is to be hoped that the voters will embrace this opportunity to register their opinion. It is a matter that touches the individual interest of every citizen, and he who fails to vote on this proposition will be derelict in the performance of a public duty."*

*Statement to Voters, Election November 12, 1908.

VIEW THE FAMED VALLEY

HETCH HETCHY WAS MORE OR LESS of a fable. Few San Franciscans had ever set foot in that region. So that they might have first hand information, and be able to make a recommendation to the people, based on their own observations, it was decided that the entire Board of Supervisors should go to the out-of-the-way, lonely spot in the mountains to see for themselves.

It was a considerable undertaking. No party of that size had ever been in those remote recesses. Arrangements had to be made for mules and horses, camp equipment, and a hundred minor details in order to make it possible for men unused to the mountains to go over the rocky, precipitous trails.

Everything in readiness: The supervisors, press representatives and other citizens, willing to defray their own expenses left the ferries at 8:20 on the morning of Tuesday, August 19, 1908, over the Southern Pacific Railroad for the Yosemite Valley.

The entire Board of Supervisors was unable to go, but fourteen out of the eighteen members were present. Mayor Taylor was detained in the city by press of executive business. The official party was composed of the following:

SUPERVISORS

Paul Bancroft,	Thos. Jennings,	Chas. A. Murdock,
J. P. Booth,	James A. Johnston,	D. C. Murphy,

A. H. Giannini, M. Hall McAllister, Henry Payot,
Oscar Hocks, Ralph McLeran, Allan Pollok,
L. P. Rixford, George Connolly.

OTHER OFFICIALS

Marsden Manson, *City Engineer*,
John E. Behan, *Clerk of the Board of Supervisors*,
H. G. McKannay, *Secretary to Mayor Taylor*,
W. B. Kollmyer, *Attorney for Mayor Taylor*,
H. A. Mason, *Bond Expert for the Board of Supervisors*.

REPRESENTATIVES OF THE PRESS

John P. Young, *Chronicle*, Wm. Wasson, *News*,
Ray W. Taylor, *Examiner*, Wm. Claussen, *Post*,
W. H. Thomson, *Call*, Guy R. Stokes, *Globe*.

Several others not listed accompanied the party into the Hetch Hetchy.*

They reached El Portal at 11:00 P. M. but remained on the train until the following morning. They were awakened early and enjoyed breakfast at El Portal Hotel. In the meantime four and six-horse stage coaches had drawn up in front of the caravansary and the delegation started on the fifteen-mile drive to the Sentinel Hotel in the Valley.

The rest of the day was spent exploring Yosemite. The following morning the start was made for the Hetch Hetchy. Three stage coaches were required to accommodate the party. They took the Big Oak Flat road out of the Valley and arrived at Crocker's in the afternoon dust ladened and hot.

By evening everyone had his appetite sharpened; the fricassed chicken and hot biscuits were talked of long afterward. Around a bonfire in the evening stories were told. George Connolly sang Coster songs. An impromptu meeting of the Board of Supervisors was held.

This was arranged by some of the wags in the party, as a joke on Oscar Hocks, who fell into the trap set for him to the great amusement of the entire crowd.

*Journal of Proceedings, 1908, p. 751.

Upon motion of one of the members, a meeting of the Board was called. One was elected as the presiding officer. Behan, as clerk, was requested to take down the minutes of the meeting.

It was then moved and seconded that the saloon licenses in San Francisco be raised from $500 to $1,000 a year. It was said that a free discussion of this important matter was impossible in San Francisco owing to the outside influence brought to bear on the members.

Hocks was on his feet in an instant. He was a liquor dealer and the increasing of the license would have had the effect of cutting down the number of saloons very materially.

"I protest," said Hocks, "against any such action being taken. This is not a legal meeting. You can't hold a meeting of the Board of Supervisors out here by the roadside."

Hocks was told that the policy of the Board could be determined upon and re-enacted after the Board met in San Francisco.

"This is not right," said Hocks, hotly, "Property interests are involved. The people have a right to be heard."

Then someone in the audience began to laugh and Oscar was left standing making his protest while the party broke up.

The following morning the journey was resumed. The mountain air was invigorating and the horses swung along at a good rate, through the pines and cedars, to the Hog Ranch. Upon their arrival they found themselves confronted by a forest fire. A huge pine tree that was being eaten through by the flames, aroused the sympathy of the supervisors and a bucket brigade was formed. By relaying the buckets from a spring about a hundred yards distant the fire was extinguished and the monarch of the forest preserved.

From here on there were no roads. Mules and horses had been gathered at this point and an hour or two were spent in selecting mounts and adjusting stirrups and saddles. From a telephone nailed to a tree a story of the

supervisors' experiences since leaving Yosemite Valley was telephoned to the San Francisco papers.

From the Hog Ranch (Portulaca—now Mather) to the Hetch Hetchy Valley is a distance of nine miles. The entire afternoon was spent in making this part of the journey, the trail being over bare granite rocks, around huge boulders and down steep declivities. Towards evening the edge of the famed valley was gained. Exclamations of surprise and wonder at the beautiful view were general.

Accomplishing the steep descent to the floor of the Hetch Hetchy Valley, the party passed through meadowlands finally reaching the camp site situated midway between the boundaries of the Valley which is seven and a half miles in length. Here a large tent had been pitched by the side of the Tuolumne River, where the meals were served. Scattered about were smaller tents containing cots sufficient to accommodate all.

Elmer E. Smith, owner of the principal part of the Hetch Hetchy lands had joined the party at the Yosemite Valley. He told the supervisors he stood ready to sell his holdings of 1,300 to 1,400 acres to the city for $150,000.

The next day was spent in riding around the Valley. Many just rested. The following day the ride was begun to Lake Eleanor, eleven miles distant. On their way the party again encountered a forest fire. It was being fought by soldiers under Major H. C. Benson. This time the supervisors were forced to make a Wild West dash through the burning timbers. Gus Manley and George Kenney, the guides, lined up the supervisors. Then one at a time the horses were put to a gallop and sent through a hundred yards of smoking brush that had just been burned over, but still blazing in many places.

The party arrived at Lake Eleanor that afternoon. It was met by Wm. Ham. Hall, who had a number of cabins by the Lake. At this time he owned about 600 acres of the land about the Valley, or one-half of the acreage that

Supervisors' party at the Hog Ranch take mounts for the nine-mile ride into the Hetch Hetchy Valley. In the foreground left to right are: Dr. A. H. Giannini, Thos. Jennings, Henry Payot, J. P. Booth, John P. Young, Oscar Hocks, a guide, Allan Pollock, Wm. Claussen, Chas. Murdock.

PLATE XI.

would have to be acquired by the city. After a refreshing swim in the Lake the party sat down to a meal of lake trout. In the morning all started on a ride to the upper end of the Lake, thence down stream to the proposed dam site.

Efforts were made by the supervisors to get a definite statement from Hall as to what he wanted for his holdings. He said that he was unable to speak for his associates at that time.

The return trip was begun in the same manner as it had been made previously. Practically two weeks were spent in making the journey. The Press representatives had kept the people of San Francisco fairly well informed of the progress the supervisors were making, their observations, etc., through telephone communication with the Yosemite Valley, from which place their messages were relayed by telegraph to San Francisco.

The immensity of the undertaking staggered the members of the Board. How anyone could get into the country to work was almost incomprehensible. As an illustration: It cost the city $180,000 to build a road from the Hog Ranch to the Hetch Hetchy Valley. The nine miles the supervisors rode their first afternoon on horseback. The report to the citizens, however, was a favorable one. The supervisors deemed it necessary to acquire the water rights and the reservoir sites if only for future generations to develop. Also as a lever to compel the Spring Valley Water Company to make a bargain with the city for the sale of its properties.

The election was held on November 12th. The registration of the city at that time was 75,467, only men voting. One hundred and thirty-five precincts were opened by the election commission. The vote was overwhelmingly in favor of the Hetch Hetchy project; also for the purchase of a small company's holding, supplying water to the people in Visitacion Valley, known as the County Line Water Company. The vote on the proposals was as follows:

To acquire by purchase the lands and water rights in and about the Hetch Hetchy and Lake Eleanor: Yes, 34,950. No, 5,708.

To incur a bonded debt of $600,000 for the purpose: Yes, 34,572. No, 5,647.

To purchase County Line Water Company: Yes, 33,897. No, 5,955.*

*Municipal Reports, 1908-09, p. 1417, Appendix.

DELAYS COST CITY MILLION DOLLARS

LED FROM ONE SOURCE OF SUPPLY to another, the people at last had made a decision. One of the main reasons put forth by the proponents of the Hetch Hetchy source was its cheapness. Located in the public domain, it was hoped to secure it for nothing. But the best laid plans often go astray.

The "surreptitious" surveys of the Lake Eleanor and Hetch Hetchy country by Lippincott had gone for naught. The publicity it was hoped to avoid, and thus secure rights for the city in advance of others, while partially successful at the outset, had been negatived by delays.

With the election held and the money voted the city had been left in an anomalous position. When the original surveys were made Lake Eleanor and the Hetch Hetchy Valley were on a parity, so far as the actual filings were concerned.

With the filing of the Grunsky plans in 1902, however, no provision had been made in them for the utilization of Lake Eleanor. The plans called for a dam at Hetch Hetchy. No mention is made of Lake Eleanor. It was taken as a notice by Wm. Ham. Hall that the city did not propose making use of Lake Eleanor.

As has already been stated Hall was familiar with the territory. He was State Engineer from 1878 to 1889, Supervising Engineer for U. S. Geological

Survey from 1890 to 1892. He knew what filings meant. In order to hold them development work has to be prosecuted to maintain them. He lost no time in making use of his knowledge. In a memorandum prepared by him, he gives his version of a transaction which secured him and his associates $1,000,000. It cost the city that much for rights it had hoped to secure for nothing. He says:

> "After City Engineer Grunsky reported favorably on the Hetch Hetchy project, including Lake Eleanor and Eleanor Creek as an auxiliary water source, the city practically abandoned the project even under the Phelan administration, and actually threw it overboard under the Schmitz administration.
>
> Being familiar with the region and the water supply capabilities of it I went into a free and open field, thus made, and, without touching Hetch Hetchy proper, located all rights on Eleanor Creek and Lake and also on Cherry Creek, a better water supply and power field than Eleanor Creek, which had been overlooked by Grunsky.
>
> Hetch Hetchy Valley on which Grunsky had laid emphasis as the source was thus still left to the city.
>
> Following the making of locations, made under State and Federal laws with some associates we bought up all the lands in private ownership within the Lake Eleanor basin and in Cherry Valley, and other commanding areas at a cost of about $100,000.
>
> While it was our idea to promote a power development and water supply project, we knew all the time that if the city went ahead with the Hetch Hetchy project it would have to have our holdings."

Hall had accomplished his work during the years between 1902 and 1906. He had secured options on practically everything worth while in his section of the country and had purchased outright the most strategic of the holdings.

After the disaster of 1906 his associates tired. In an effort to hold the properties together Hall appealed to his relative, John Hays Hammond to

assist him. Hammond agreed. The Tuolumne Water and Supply Company was formed. Jesse W. Lilienthal was made president. He represented both Hall and Hammond. This corporation took over the holdings upon an easy payment plan for $300,000.

This was the situation that confronted the city in 1908, when Secretary Garfield gave the city the Government's permit to go in on the Federal domain, tied down with the stipulation that Lake Eleanor should be developed *first.*

The city had no rights at Lake Eleanor. Practically everything there was now in the ownership of the Tuolumne Water and Supply Company. At least what was owned by the company would have to be purchased before the city could begin to proceed with the Hetch Hetchy project.

Hall now undertook to dispose of these properties to the city on a commission basis for John Hays Hammond and John Coffee Hays, his California representative. In this Hall was successful. He claimed that he did not receive what was promised him by Hammond as a commission. It led to an estrangement between the two men, which was finally taken into the courts.

As soon as city authorities attempted to carry out the wish of the people, as expressed in the 1908 bond election and the Garfield permit, they had to deal with Hall. A formal offer to sell the properties was made by Lilienthal on February 28,1910. For nearly two years no agreement could be reached. Much negotiation ensued. Finally the city agreed to purchase the Lake Eleanor holdings for $400,000. And the Auditor's demand No. 15458 shows that this sum was paid on March 29, 1910.

In the meantime it had been discovered that Lake Eleanor by itself would be inadequate for the City's needs. Certain rights the Tuolumne Water and Supply Company owned on Cherry Creek were also a necessity. Hall in his narrative says:

"In buying the Eleanor group of holdings the city took an op-

tion on the Cherry group of rights and properties for $600,000. This deal was finally closed in 1911. But the Auditor refused to sign the warrant to pay the $600,000 on the ground that the city was not getting a good title to the water rights.

Litigation was threatened by Lilienthal and Hays and finally the Auditor's demand No. 287 was paid in October, 1911, for $652,000."*

The additional $52,000 was for interest. It also included some incidentals for work done on the properties.

In addition to these rights and in order to comply with another provision of the Garfield permit the city purchased lands from Elmer E. Smith, for which it paid $155,884.60 and from Lizzie B. Covel for herself, and as guardian for Horatio G. Kellet, lands for which was paid $17,572.20.

With these rights finally acquired the city was ready to proceed with its enterprise. City Engineer Manson had filed his plans. But the Hetch Hetchy Valley was not a part of his project. Grunsky had relied on the Hetch Hetchy Valley. Manson was now forced under the Garfield permit to base his plans on Lake Eleanor. His studies included the following estimated cost:

"Lake Eleanor division	$1,834,525
Tuolumne division	3,285,400
Foothill division	1,708,500
Valley division	9,118,700
Bay division	12,792,100
City division	11,100,000
Rights of way	1,000,000
	$40,839,225
Contingencies and engineering	4,160,775
	$45,000,000

*Journal of Proceedings, 1910, p. 221.

It will be noted that these plans and estimates provide for a power development fully equal to all pumping requirements and that they do not include the development of the Hetch Hetchy reservoir.

MANSON."*

*Municipal Reports, 1909-10, p. 1236.

A LAMENT

ONE WOULD NATURALLY SUPPOSE THAT SAN FRANCISCO WOULD HAVE NO TROUBLE AT ALL IN SECURING THE PRIVILEGE WHICH SHE ASKS AT THE HANDS OF CONGRESS; ONE WOULD SUPPOSE THAT A CITY LIKE SAN FRANCISCO, WITH ITS POPULATION AND ITS IMPORTANCE, AFTER HAVING BEEN VIRTUALLY WIPED OFF THE FACE OF THE EARTH BY EARTHQUAKE AND FIRE, COULD HAVE HAD NO DIFFICULTY WHATEVER IN SECURING WHAT SHE DESIRED; IN FACT ONE WOULD SUPPOSE THAT CONGRESS WOULD HAVE BEEN EAGER TO HELP HER; THAT CONGRESS WOULD HAVE BEEN EAGER TO GIVE HER THAT WHICH SHE HAS SOUGHT FOR SO MANY YEARS AND WHICH IS NOW WITHIN HER GRASP, FOR UNTIL SAN FRANCISCO HAS A SUPERABUNDANT WATER SUPPLY IN ESSE AND POTENTIALITY SHE IS IN DEADLY PERIL. SO THIS IS A MATTER OF VITAL NECESSITY FOR HER, AND WE MUST TAKE EVERY STEP WE POSSIBLY CAN TO OVERCOME THE OPPOSITION WHICH HAS SO SUDDENLY AND UNEXPECTEDLY DEVELOPED AT WASHINGTON. + WHY IS IT THAT WE HAVE TO STRUGGLE FOR THAT WHICH SHOULD FALL INTO OUR LAP? + TO SOME IT MAY BE A MYSTERY, TO OTHERS IT MAY NOT BE A MYSTERY. THE QUESTION, HOWEVER, IS AS IT IS AND WE MUST MEET THE CONDITION

EDWARD ROBESON TAYLOR

From Journal of Proceedings, 1909, p. 38.

PLATE XII.

NATION JOINS IN DEBATE

EXTRAORDINARY EVENTS WERE about to happen. San Francisco was to get her first experience in the national halls of legislation at Washington. It was a depressed delegation of citizens which returned from that affair. It was believed that an exchange of lands with the Government would be but a mere formality. It turned out to be a "Donnybrook."

How the storm was manufactured is not known. Mayor E. R. Taylor, at a special session of the Board of Supervisors to consider sending assistance to the sorely distressed committee at Washington, said: "To some it may be a mystery, to others it may not be a mystery."

In order that the city might proceed with its Hetch Hetchy plans a joint resolution had been introduced in Congress, providing for the exchange of lands between the city and the Federal Government lying within the Yosemite National Park. This was a provision of the Garfield permit.

San Francisco had done her part. She had secured options and paid deposits on 1,400 or 1,500 acres of land which she stood ready to exchange, acre for acre with the Government—she to take the land in the floor of the Hetch Hetchy Valley in exchange for land lying outside the Valley. By this trade the City would have its ownership confined to the Valley proper. The Government would become possessed of all private interests outside of it.

Dr. A. H. Giannini, Chairman of the Supervisors' Committee on Public Utilities, and City Engineer Manson went to Washington to appear before the Senate and House Committees on Public Lands. They said: "We were assured that there would be no difficulty in securing the passage of a joint resolution effecting this exchange by the approaching holidays."*

The hearing opened before the House Committee on December 16, 1908, with the Hon. Frank W. Mondell, Chairman, presiding. City Engineer Manson presented the city's petition for the exchange of lands. Supervisor Giannini made a statement. Secretary Garfield gave his reasons to the Committee for granting the permit to the City of San Francisco.

At this juncture practically the entire country declared itself in on the debate. A letter was read from J. Horace McFarland, President of the American Civic Association, Harrisburg, Pennsylvania. He urged the most minute investigation be made of the transaction. He asked that an opportunity be given to those who opposed it to express themselves. He cited the Appalachian Mountain Club of Boston, the American Civic Association of Philadelphia, the Sierra Club of San Francisco; Richard Underwood Johnson, editor of the Century Magazine, John Muir, the geologist, and others.

A letter was filed from Wm. E. Colby, member of the Sierra Club of San Francisco, to Norman J. Hapgood, editor of Collier's Weekly, in which he said:

> "My life and my business interests are interwoven with those of San Francisco, and no one has her welfare more at heart than I, and yet I know that this precedent of entering national parks is wrong in principle and unnecessary in fact. I regret more than I can express in words to learn that in this instance Mr. Pinchot has become an advocate of comparatively local interests as opposed to the interests of this great nation."†

In a brief submitted by Robert Underwood Johnson, he said:

*Journal of Proceedings, 1909, p. 285.
†Hetch Hetchy Hearings, Committee on Public Lands, p. 35.

> "The charming Tuolumne Fall at the head of the Hetch Hetchy Valley will simply be extinguished by the creation of a valley reservoir. The valley itself is to be wiped out of existence. A tame expanse of water, the work of man, substituted for the exquisite and wonderful handiwork of God.
>
> The coolness with which these gentlemen endeavor to forestall the feeling of revolt against the desecration by saying that they propose to improve upon this exquisite creation of delight and repose is little short of blasphemy. . . . Satan himself would never have dared to play such tricks with the garden of Eden."*

The President and Directors of the Sierra Club sent a protest in which they said: "If dammed and submerged as proposed, Hetch Hetchy would be rendered utterly inaccessible for travel." It was signed by John Muir, as president, and C. T. Parson, J. N. LeConte and Wm. F. Bade as directors.

After a two days' session the matter had become more or less discussed by the press of the entire country. An adjournment was taken until January 12th. The Committee was to have an executive session. Giannini says:

> "We did not expect to attend this meeting, but in passing through the hall, on the above date, we noticed the meeting was being held. The attorney for the Spring Valley Water Company had appeared without announcement or notice and was addressing the Committee, presenting legal objections and opposing the Resolution of Exchange."†

A request for reinforcements was sent immediately to Mayor Taylor. In response a committee of five composed of Warren Olney, Sr., ex-Mayor of Oakland; James D. Phelan, ex-Mayor of San Francisco; City Attorney Percy V. Long, Walter McArthur, editor of Coast Seaman's Journal and J. D. Galloway, C. E., hastened to Washington.

The Congressional sub-committee became badly divided. Eight of the committee signed a report to the committee of the whole favoring the ex-

*Hetch Hetchy Hearings, Committee on Public Lands, p. 37.
†Journal of Proceedings, 1909, p. 286.

change. Dissenting was a minority report signed by Mondell, as chairman of the committee, and three others; a second, signed by two members, and a third, signed by one.

The hearings reconvened on January 9, 1909. This time the Committee was fairly deluged with addresses from clubs and telegrams from every part of the country.

E. J. McCutchen was on the ground representing the Spring Valley Water Company. He made lengthy representations to the Committee why the Resolution should not be adopted. He charged that the city's real object in securing the Hetch Hetchy was to use it as a "club." During the course of his remarks he said:

> "It does seem to me that it is going a long way for Congress to pass an act which will have the effect of dismembering a national park in order to supply a municipal corporation with a big stick as a trading asset to acquire the plant of a quasi public corporation.
>
> I suggested awhile ago that San Francisco was particularly anxious to get the end of a big stick to wield over Spring Valley Water Company. If they could get this grant from Congress they could go to Spring Valley Water Company and say:
>
> 'Here you see we have this grant from Congress. We can proceed with the building of this system if we see fit. We will see fit unless you come to the captain's office and talk business, and sell your property at a price which we are willing to pay. If you are not willing to trade on a basis that is satisfactory to us we will build this plant, and will drive your company into bankruptcy.' "*

The reading of telegrams and messages was then begun. Excerpts from a few of them will show their distribution and tenor:

> Miss Tallulah LeConte, Bellingham, Washington: "If the people of San Francisco are really trying to get possession of our Hetch Hetchy Valley and make a reservoir of it I want to protest . . . That proposition simply can't go through—it is ridiculous—but,

*Hetch Hetchy Hearing before Congress, pp. 68-70.

according to Mr. Parsons, probable. Please 'pull all the wires' you can to oppose this, and then come to California and see.

George Edwards, 2530 Dwight Way, Berkeley: "Under the pressure of an emotional President, the Secretary of the Interior has overstepped the intent of the law. If this vicious precedent is established now, it is practically certain that the future will see these national parks destroyed."

Edith and Ida Elliot, New Bedford, Massachusetts: "It is a shame and desecration to appropriate Hetch Hetchy Valley for such a purpose."

Joseph Clemens, Ft. Douglas, Utah: "I feel like saying 'Woodman, spare that tree, touch not a single bough.' With my knowledge of the mountains and streams of California, I am certain this can be avoided."

H. Muellen, Los Angeles, California: "I firmly believe that any attempt at conversion to any other purpose than that for which the region is being used would be an injustice to the people of this country generally."

Melville B. Anderson, Stanford University, California: "We who are 'ancients of the earth and in the morning of the times' should be mindful that we hold the resources of the land in trusteeship for the generations which will have to bear the heat and burden of the day. What name shall we deserve among them if we leave them the supreme natural beauties of the world wantonly defaced?"

F. M. Fultz, Burlington, Iowa: "I am familiar with the Hetch Hetchy Valley, and would deem the turning of it into a reservoir nothing less than a public calamity."

Kasson Avery, Los Angeles, California: "If the Hetch Hetchy were dammed (and let me add damned) and converted into a tank its entire floor would be rendered useless for camping purposes."

Laura McDermott, Virginia City, Nevada: "In this age of ex-

ploitation . . . America's greatest gift from the Creator is about to be sacrificed at the feet of Mammon."

Thos. J. Pilkington, Sebastopol, California: "The grafters and desecrators are scheming against the rights of the people. There are other sources of water that San Francisco can utilize."

J. H. Cameron, Chicago, Illinois: "To disturb such a spot seems almost criminal; to permit this desecration an unpardonable sin."

Lydia Atterbury, Berkeley, California: "The whole Tuolumne River region now lying within the National Park is of unusual beauty and grandure, and it should remain the property of the United States and preserved for the use of the whole people."

Caspar W. Hodgson, Yonkers, New York: "I know San Francisco's methods of graft like a book, and I don't believe she will ever reform. In fact, I think most of her people believe in graft, the only crime being in getting caught.

I would give my head to be on your committee, for I see here a chance to do the square thing, a great thing, a chance to distinguish one's self for all time."

The above are only portions of the telegrams sent. There are over one hundred pages of the Congressional Record given over to the publication of these messages. These, however, will serve to show the line of arguments used and the widespread feeling against the city's project.

As the hearing proceeded it became apparent to the city's representatives that there was no hope. They finally requested Senator Flint to withdraw the resolution from further consideration and returned home.

DEFEAT SPRING VALLEY PURCHASE

EVENTS BEGAN TO DEVELOP RAPidly. A storm was raised over Spring Valley opposition at Washington. The defeat of the city's representatives had its repercussion in San Francisco. Proponents of municipal ownership and Hetch Hetchy enthusiasts became more determined than ever. A huge bond issue was determined on to develop an independent water supply unless some arrangement could be made for the purchase of the existing system.

While there had been constant friction between the city and the water company it had been confined to a fight over the adequacy of rates, injunctions, dreary actions in the Federal courts, the impounding of moneys, with an occasional outburst from property owners of some isolated section demanding water. This was a constant accompaniment in a minor key, low but loud enough to be a part of the general clamor of a great city.

This accumulation was fired by the open opposition of the Water Company at Washington. There was a pretty thorough airing of municipal affairs before the Congressional Committee. Charges of bad faith and hidden motives had been hurled by both sides.

Attorney Edward J. McCutchen and Hermann Schussler insisted that the municipal administration was attempting to wreck the Water Company in order that it might be bought up cheaply. They insisted rates had been re-

duced so that it was impossible for the Company to finance needed extensions. In addition to this they said the Hetch Hetchy project had been injected as a " big stick."

Supervisor A. H. Giannini and City Engineer Manson replied by charging the Company with trying to retain its hold on its monopoly. They cited the purchase of Calaveras Valley when the city was negotiating for it. That in every effort made to get the Company to sell to the city it had refused.

Shortly after the return from Washington a program was mapped out containing two main features :

One: An issue of $45,000,000 to complete the entire Hetch Hetchy system, independent of any other water supply.

Two: A final effort to come to some understanding with the Spring Valley Water Company for the sale of its properties to the city.

The unsatisfactory situation at Washington was no deterrent. City Engineer Manson had secured permission from Secretary of the Interior Garfield to open up the proposed dam site at Lake Eleanor, cut timber and trails, make surveys, and to build conduits and roads in the National Park.

Gifford Pinchot, as Forester, gave the City of San Francisco permission "to construct dams, reservoirs, conduits, and power plants . . . in connection with installation of a water works system" in the forest reserve.

The final payments were made for all of the privately owned lands in the National Park on which the city had obtained options on July 20, 1909. These were the lands the city was required to purchase under the Garfield permit for which money had been voted by the people in 1908.

Attention was now turned to Spring Valley. In a joint report of the experience at Washington City Engineer Manson and Dr. A. H. Giannini said:

> "It must be recognized that the efforts of the Spring Valley Water Company and its co-workers were to thwart the city in the acquisition of this Sierra supply. That these efforts will in

all probability be continued. It must also be recognized that so long as this opposition shall be continued no satisfactory basis of purchase of its works can be arranged.

The question of municipal ownership of this necessity cannot be allowed to drift nor be delayed without material loss to both seller and buyer. . . . If no satisfactory basis for the purchase of the existing supply can be submitted by the Spring Valley Water Company, the development of the Tuolumne source and its independent power should be pushed to completion.

This city must perfect the acquisition of the Hetch Hetchy source by its introduction either as a reinforcing or as an independent supply. If steps towards either of these ends be opposed by the Spring Valley it will be difficult for that company to finance any project it may have to bring its supplies up to the growing demands of this city.

If this conflict shall be pursued for any considerable time it is manifest that the company will be in a position to allege that its inability to meet the growing demands is due to the efforts of the city to introduce a 'rival' supply to 'bankrupt' the company.

To make any just basis for further misstatements or disagreement impossible, we respectfully recommend that the purpose of the officials of this city to purchase the Spring Valley plant be reiterated and that the attention of every stockholder of that company whose address can be obtained be specifically called to the purposes of the city as soon as a 'square offer' can be had.

Moreover, that it is the purpose of the city to perfect for itself the ownership of the Hetch Hetchy source as a reinforcing supply if possible, or as an independent supply if forced to do so. That it rests with the stockholders and officials of the Spring Valley Water Company to make what Senator Nelson declares has never been made, namely, a 'square offer.' "*

Efforts now were made to come to terms with the Spring Valley Water

*Municipal Reports, 1908-09, p. 1423.

Company. A reorganization had taken place some years previously. The name had been changed from the Spring Valley Works to Spring Valley Water Company. In April, 1908, Captain A. H. Payson had told the Federated Water Committee that he would recommend the sale of the properties for the face value of the Company's stock and bonds, equivalent to $34,000,000. That $4,000,000 could be deducted if the Company were allowed to retain the Merced lands within the city and county limits. This offer he later withdrew in a formal communication on January 22, 1909.

A committee was appointed, consisting of Supervisors Thomas Jennings, James A. Johnston and City Attorney Percy V. Long to negotiate a price with representatives of the Company. The meeting with the officials of the Spring Valley Water Company took place in the Mayor's offices in the Mills Building. W. B. Bourn, President of the Spring Valley Water Company, Frank B. Anderson and A. H. Payson represented the Water Company. The outcome of this meeting was that the Company agreed to sell the city everything it had for $35,000,000.

A special bond election was called for January 10, 1910, at which two proposals were submitted:

Proposition 1: To incur a bonded debt of $45,000,000 for a water supply from Lake Eleanor and the Tuolumne River, known as the Lake Eleanor-Tuolumne system. With the proviso that:

If proposition No. 2 on the ballot received the necessary two-thirds vote, then bonds to the amount of $23,000,000 only should be issued.

Proposition No. 2: To incur a bonded debt of $35,000,000 for the purchase of the Spring Valley properties.

A spirited campaign was begun by municipal officials and members of various organizations to assist in carrying the bonds. It was considered almost a foregone conclusion that the bonds for the Lake Eleanor-Tuolumne system would carry. The main efforts were directed to urging the citizens to vote

for the purchase of the Spring Valley properties and settle the half-century controversy.

Quite unexpectedly P. H. McCarthy, the new Mayor, cast his full strength against the Spring Valley purchase. It was difficult enough for the Press, which was generally favorable to both propositions, to forget the many years of fighting they had indulged in with the Company over valuations and support the price of $35,000,000. With McCarthy's active fight against the purchase it was recognized that the carrying of the proposal was extremely doubtful. The people were apathetic.

At a Sunday night joint session of the Building Trades and San Francisco Labor Councils a resolution endorsing the Lake Eleanor-Tuolumne proposal but rejecting the Spring Valley purchase was voted which read:

> "Resolved that it is the sense of this meeting that we concur in the opinion and recommendation set forth in the document read by Brother P. H. McCarthy, President of the Building Trades Council, to the effect that we go on record as being heartily in favor of the Hetch Hetchy proposal and opposed to the Spring Valley proposition."*

During the onslaught that was made against the Spring Valley by McCarthy the stock of the Company was driven down $6 a share. He took the position that the properties were not worth the money. In addition to this he insisted that the bonding limit of the city would be exceeded if both propositions carried.

He was bitter against the outgoing Taylor administration, claiming that it had expended and tied up every dollar in the municipal treasury. In one of his speeches he said:

> "Since the election the outgoing administration not only has let no opportunity pass to enter into contracts to exhaust every available dollar in the treasury, but has schemed to embarrass

*San Francisco Chronicle, Jan. 3, 1910.

the incoming administration by entering into negotiations with the Spring Valley to purchase that Company's properties for $35,000,000."*

The result of the election was a defeat for the purchase of the Spring Valley properties. The $45,000,000 bond issue for the Lake Eleanor-Tuolumne system carried by a very large majority.

The vote on the Spring Valley proposal was very close. It was realized that by a little more effort the question of municipal ownership of the city's water supply would have been settled for all time. It was left to embarrass the future situation.

The vote on the two proposals was:

Proposition No. 1: To incur a debt of $45,000,000 for Lake Eleanor-Tuolumne plan	Yes	32,886
	No	1,609
Proposition No. 2: To purchase Spring Valley for $35,000,000	Yes	22,068
	No	11,722

The necessary two-thirds vote was not secured for the second proposition.

*San Francisco Chronicle, Jan. 3, 1910.

THE ARMY BOARD

THE ALMOST METICULOUS ZEAL with which succeeding Secretaries of the Interior saw to it that San Francisco should not appropriate any part of the national domain, to supply her need for water, probably has no parallel in the nation's history. It would tend to make one a believer in the efficiency of government generally, were it not for the manner in which the whole subject of the Hetch Hetchy had been kept in a state of doubt for over a decade.

Secretary of the Interior Ballinger cited the city's representatives in February, 1910, to show cause why the Hetch Hetchy Valley should not be cut out entirely from the project, leaving only Lake Eleanor to the city.

It was what Mayor P. H. McCarthy termed a "rude awakening" when President William Howard Taft informed him and other representatives that the permit granted the city by the Secretary of the Interior James R. Garfield in 1908 was "not worth the paper on which it was written."

In a report of their visit to Washington, McCarthy said:

> "President Taft showed your representatives quite clearly that the permit issued by Secretary Garfield was not worth the paper on which it was written, providing that his successor in office, whether immediate or remote, desired to revoke the same before *use* vested a right.

> The President deeply deplored the manner in which the people of San Francisco were led to believe that they had the right under the Garfield Act to proceed with the building of a water works necessitating the damming of the Hetch Hetchy Valley."*

To review briefly what the facts were on which the city's representatives had relied that the privileges she desired were legal:

First, In the U. S. Geological Survey Report of 1892 the Hetch Hetchy Valley is designated as Reservoir Site No. 33. Lake Eleanor and the Cherry Valley also were marked for reservoir purposes.

Second, J. H. Quinton, member of the U. S. Geological Survey in 1899 had suggested that the valley be used for the purpose of supplying San Francisco with water.

Third, Congress in 1901 amended the original law of 1900 creating the Yosemite National Park so as to expressly provide:

> "That the Secretary of the Interior be authorized and empowered, under regulations to be fixed by him, to permit the use of rights of way through . . . Yosemite, Sequoia and General Grant National Parks, California, for . . . canals, . . . and reservoirs for . . . the supplying of water for domestic, public or any other beneficial uses."†

Fourth, Attorney General M. D. Purdy in an opinion rendered to President Roosevelt said:

> "I have carefully considered the language of the Act as above quoted, and am clearly of the opinion that Congress thereby intended to vest in the Secretary a discretionary authority to grant or refuse applications of this kind."‡

Fifth. Upon the opinion of the Attorney General, Secretary of the Interior Garfield, with the full knowledge and support of President Roosevelt, granted the City of San Francisco the rights she desired.

*Journal of Proceedings, 1910, p. 837.
†Fisher Letter, 1913.
‡Reports on Water Supplies, 1900-08, p. 145.

Sixth, Finally, Franklin K. Lane, then City Attorney, but later himself Secretary of the Interior, in concluding a brief directed to President Roosevelt, said:

> "As to the revocation of this privilege, it is hardly probable so long as used for the purpose for which it was granted and without a decision from the highest tribunal that any official would take such a step, particularly in the face of the law of February 1, 1905."

Yet this is exactly what had been proposed by Secretary of the Interior Ballinger.

Secretary Garfield had granted the city permission to use Lake Eleanor; later the Hetch Hetchy Valley when needed. The City of San Francisco had held a bond election as provided in the Garfield permit. The people had voted $600,000 of bonds with which to purchase all of the privately owned lands in the Yosemite National Park for the purpose of exchanging them with the Government. This had been followed by a second bond election in 1910 of $45,000,000 for the actual construction of the works.

This second bond election was held on January 10, 1910. On February 25, 1910, a little over a month later, the Mayor and the Board of Supervisors were surprised to receive a letter from Secretary R. A. Ballinger in which he said:

> "In view of the importance of the public interests involved in this matter, and the Government's obligation in connection therewith, I feel it my duty to call upon you to show cause why the Hetch Hetchy Valley and reservoir site should not be eliminated from said permit."

The first day of May, 1910, was set as the time for the city to make its showing at Washington. It was not believed that Lake Eleanor alone would be sufficient for the city's needs and that she would not be warranted in proceeding with her plans unless she were assured of the use of the Hetch Hetchy Valley when time made it necessary.

At the request of Secretary Ballinger, the President agreed to the appointment of a board of three Army engineers, as an advisory board. As a result of this suggestion Lieutenant Colonel John Biddle, Lieutenant Colonel Harry Taylor and Colonel Spencer Cosby were appointed to sit as such a board.*

The actual hearing before the Secretary did not begin until May 25th. It developed that the former protestants against the use of the Hetch Hetchy were present in considerable numbers; that due to the representations made by them Secretary Ballinger had personally visited the Yosemite Valley with George Otis Smith, Director of the U. S. Geological Survey in October, 1909. A report submitted by Engineers Louis C. Hill and E. G. Hopson, had caused Smith to render a formal opinion that Lake Eleanor with other procurable reserves, would be sufficient for the city's needs. Upon this recommendation Secretary Ballinger had acted.

The nature lovers, as they were termed, were represented by J. Horace McFarland, Richard B. Watrous, of The American Civic Association; Professor William F. Bade, The Sierra Club of California; Edmund A. Whitman and Phillip E. Harroun, The Association for the Preservation of National Parks; Henry E. Gregory, representing the American Scenic and Historic Preservation Society; Miss Harriet Monroe, Saturday Walking Club of Chicago. They were there opposing the city's rights.†

The Spring Valley Water Company was represented by Alexander Britton, of the firm of Britton and Gray, Washington, D. C., and Hermann Schussler of San Francisco. They insisted that the Spring Valley had all the water necessary for the City's needs and the Sierra supply was unnecessary.

The city was represented by Mayor P. H. McCarthy, City Attorney Percy V. Long, City Engineer Marsden Manson, Professor C. D. Marx and S. M. Stockslager, Attorney, of Washington, D. C.

*Proceedings before Secretary of the Interior, 1910, p. 10.
†Proceedings before Secretary of the Interior, 1910, p. 9.

The first day's session developed that there were no actual data regarding what Lake Eleanor might yield. It had a drainage of 79 square miles of territory. The Hetch Hetchy Valley the run off from 459 square miles. The Cherry Valley, over an adjoining ridge from Lake Eleanor, had a drainage of 114 square miles.

City Attorney Percy V. Long in a statement of the city's position pointed out that it was not known whether dams could be built at Lake Eleanor and points on Cherry River, and on Jack Main and Stubblefield Creeks as suggested by Director George Otis Smith. Long asked that before any action was taken by the Secretary to revoke the Hetch Hetchy permit, opportunity be given the city to make a detailed and thorough investigation.

There was a strong protest against any delay by the city's opponents. They insisted that the city had had ten years in which to make investigations.

The Spring Valley representatives brought up the availability of other supplies.

The upshot of the hearing was that the city asked for a year's delay in order to have a study made. This was subsequently prolonged to a second year, and then on to November 25, to 30, 1913.

The Advisory Board of Engineers was made a permanent board for the consideration of the subject matter. In a recommendation to the Secretary of the Interior after the second day's conference the engineers said:

> "From the information received, the Board is of the opinion that sufficient accurate data on Lake Eleanor and adjacent watersheds is not available; that as the City of San Francisco will not be permitted to do any development work in the Hetch Hetchy Valley during the interval, nor to acquire any additional rights, there is no valid reason why the year's delay asked for by the city should not be granted."*

The date for the city's next showing was set for June 1, 1911. The whole

*Hearing before Committee on Public Lands, p. 205.

The board is of the opinion that there are several sources of water supply that could be obtained and used by the city of San Francisco and adjacent communities to supplement the near-by supplies as the necessity develops. From any one of these sources the water is sufficient in quantity and is, or can be made, suitable in quality, while the engineering difficulties are not insurmountable. The determining factor is principally one of cost; in some cases, however, such as the Sacramento, sentiment must be taken into consideration.

The project proposed by the city of San Francisco, known as the Hetch Hetchy project, is about $20,000,000 cheaper than any other feasible project for furnishing an adequate supply. The only exception is the filtered Sacramento project, which in actual cost is about thirty millions greater than the Hetch Hetchy project, but by discounting to 1914 becomes only $13,000,000 greater.

The Hetch Hetchy project has the additional advantage of permitting the development of a greater amount of water power than any other

The best available sources, outside of the Tuolumne River, appear to be the filtered Sacramento, the McCloud, a combination of the Lake Eleanor-Cherry-Stanislaus and Mokelumne, and a combination of the American-Cosumnes-Stanislaus and Mokelumne. For a smaller supply the Eel River or the Yuba River could be used, but they do not lend themselves economically to combination with other sources, and are therefore to that extent not available.

x x x x x x x x x

The board is of the opinion that the use of the Hetch Hetchy Valley as a reservoir site is necessary if the full flow of the upper Tuolumne is to be conserved.

The board further believes that there will be sufficient water if adequately stored and economically used to supply both the reasonable demand of the bay communities and the reasonable needs of the Turlock-Modesto Irrigation District for the remainder of this century.

x x x x x x x x x

The board believes that on account of the fertility of the lands under irrigation and their aridness without water the necessity of preserving all available water in the Valley of California will sooner or later make the demand for the use of Hetch Hetchy as a reservoir practically irresistible. The board does not think that a delay of a few years in transforming the Hetch Hetchy Valley into a reservoir is of importance, and therefore does not think it necessary to require delaying construction of this reservoir until the Lake Eleanor and Cherry sources have been fully developed.

x x x x x x x x x

The construction of reservoirs, especially the Hetch Hetchy, will destroy a few camping grounds in the park. The construction of the proposed trails will, however, render accessible other parts of the park not now readily reached, and the number of camping places within the park is large.

The water situation that will confront the communities around San Francisco Bay if the plan proposed by the city of San Francisco is adopted may be recapitulated as follows:

Purchase of Spring Valley Water Co., $35,000,000 to $40,000,000.

Further development of this Company's system to about half the extent proposed by the company, $10,000,000.

Purchase of water systems of communities outside of San Francisco, no estimate made.

Construction of Tuolumne system as proposed by city of San Francisco, to be extended over about 50 years, $77,000,000.

Against the above expenditures there will be developed 115,000 horsepower having an estimated capitalized net value of $45,000,000.

Finally, the board wishes again to emphasize the fact that it does not present the various estimates given as reliable estimates of the cost of the different projects. Sufficient data are lacking as well as time and funds for making adequate investigations. The board believes, however, that the estimates are sufficient to permit such comparisons as are necessary to be made for judging the relative cost and merits of the different projects.

PLATE XIII.—*The Army Board favors Hetch Hetchy.*

subject matter of water supplies that had been investigated by the city for the preceding forty years, and one by one abandoned, had to be gone all over again: The city to bear the entire cost of the undertaking.

During this hearing, John R. Freeman, a noted eastern engineer, had assisted the city's representatives in the preparation of some of the data. It subsequently led to his employment by the city, at the suggestion of President William Howard Taft. He was employed to compile the report to the Board of Army Engineers. It resulted in the compilation of an exhaustive report of 401 pages. It includes a comparison of all available water supplies and a detailed plan for the development of the Hetch Hetchy project. It is known as "The Hetch Hetchy Water Supply for San Francisco, 1912. Report by John R. Freeman."

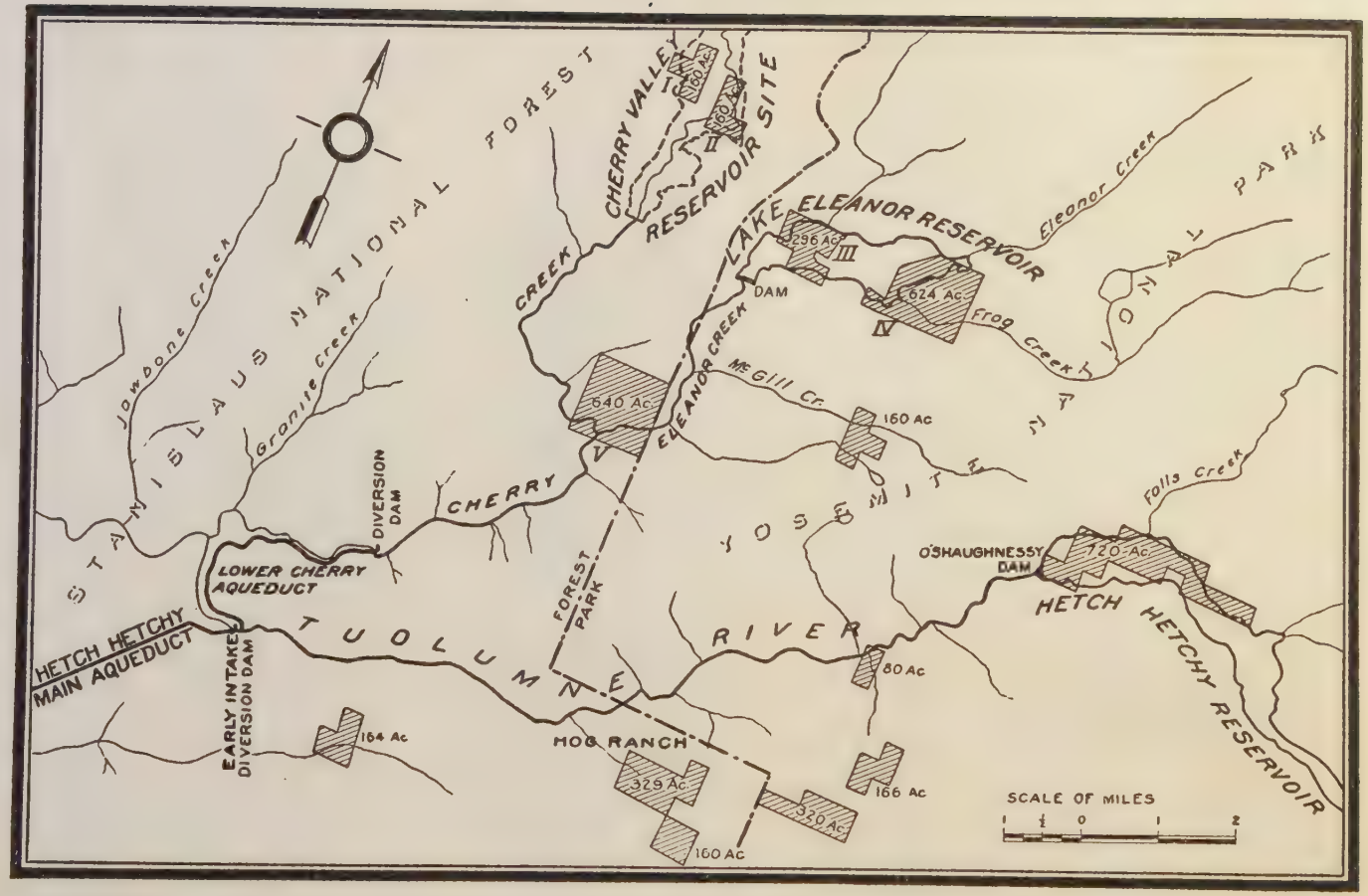


PLATE XIV.

Map showing relative positions of Hetch Hetchy, Lake Eleanor and Cherry Creek reservoirs, and how their streams unite. Darkened portions show lands purchased by city. Parcels I, II, III, IV and V were Hall and Hammond holdings.

THE FREEMAN REPORT

RAIN DURING THE WINTER MONTHS of normal years is plentiful. California's great need is for storage facilities for vast quantities of water, which otherwise run to waste, for use during the six or eight months of arid summer. While the fogs, to some extent, take the place of rains along the coast, the great cities and interior valleys are dependent upon stored waters.

The pioneers first utilized storage for hydraulic mining. Their simple ditches can be seen running for miles along the hillsides, the wonder of men when taken into consideration with the pick and shovel methods of those days. The irrigationists followed the miners with the use of comparatively small quantities of water. The return that could be realized from their operations was limited.

Hydro-electric development promised greater rewards. Enormous reservoirs have been built in the mountains to store water to be used in the generation of electric energy.

It remained for San Francisco, however, to enter upon a water and power project of magnificent proportions and fabulous cost. The original Hetch Hetchy project was outgrown while the discussion about it was taking place. When John R. Freeman of Providence, Rhode Island, one of the foremost engineers of the United States, was employed to make a study and report to the Board of Army Engineers, and through that body to the Federal Gov-

ernment, he looked to what might be the needs of the metropolitan water district around San Francisco from fifty to one hundred years in the future.

The original plans of City Engineer Grunsky of 1901 anticipated the delivery to San Francisco of 60 millions of gallons of water daily at a cost of about $38,000,000. An entire independent system from the Spring Valley Water Company. He proposed no development of electricity, other than might be necessary for forcing the water over altitudes in order to save the cost of tunneling.

City Engineer Manson eight years later increased the estimates of the cost to $45,000,000. He had to shift from the Hetch Hetchy Valley to Lake Eleanor and Cherry Valley to comply with the provisions of the Garfield permit. This necessitated two storage dams. He also proposed crossing the Bay with pipes at Dumbarton, thus cutting seven miles off the length of the aqueduct.

During the making of his preliminary estimates upon which the $45,000,000 bond issue was based, Manson also was urged to hold down his estimates to a minimum for campaign purposes. It was not believed possible to carry an election for a bond issue of over this amount.

Freeman was employed in accordance with the order of Secretary of the Interior Ballinger, subsequent to the bond issue, to disclose just what San Francisco's plans were. What they contemplated. While he was not the City Engineer, he spent two years in making a study of the problem. He changed and altered both the Grunsky and Manson plans. He took a long look ahead. He was not held down to any specific amount of money. He laid out his program with a liberal hand. His plans for only a portion of the work entailed a cost of $36,981,000. To this was to be added the purchase price of the Spring Valley reservoirs and entire distributing system for $38,500,000. A total of approximately $75,000,000.*

*Freeman Report, p. 160.

This will explain to some extent the very great increase of the cost of the project as it developed during the intervening years since the first estimates were made. To this must also be added the very great cost of performing work since the Great War. Freeman's estimates were based on paying workmen $2.25 a day. The labor subsequently cost twice this amount.

Another factor that has added very materially to the cost of the project is the hydro-electric feature. The Grunsky and Manson plans only anticipated the development of sufficient power to meet the pumping requirements. The final Manson plans did add a power line that extended into San Francisco as a possibility for the future. The art of transmitting power over long distances at that period had not reached the point where it could be done economically.

Freeman went further still than Manson with the power feature. While he says it was not proposed to begin the development of power immediately he said that ultimately this feature would doubtless become very valuable. He provided for it. In this connection he says:

> "The city does not propose in the immediate future to build any plant for the development of hydro-electric power, but it plans to carefully conserve all reasonable opportunities for power development against the time when it may become expedient for the city to undertake such matters, and the aqueduct will be built with surge shafts, inclined tunnels and appurtenances suitable for the attachment of turbine penstocks and with forebays for receiving water from the tailrace of future turbines, so that substantially the only added cost for power development will be that of the power house and its foundations, the hydraulic and electrical machinery and appurtenances and the electrical transmission lines."*

And again:

> "Today with cheap oil fuel and with three large hydro-electric enterprises bringing electric current to the city and competing ac-

*Freeman Report, p. 29.

> tively for business under the oversight of a public service commission, no occasion appears for the municipality to go into the power business. . . .
>
> The time will surely come when this power privilege will be the most valuable asset of the Tuolumne water supply system.
>
> There will doubtless be a limit to the era of oil at present prices and year by year new electro-chemical manufacturing processes are being discovered, in some of which an abundant supply of electrical energy would add to the prosperity of Greater San Francisco."*

In revising the city's entire Sierra project, Freeman ignored the provisions of the Garfield permit which provided for the development of Lake Eleanor and Cherry Valley first, Hetch Hetchy Valley as a possibility later on when it became necessary. He said:

> "The scope of the Hetch Hetchy water supply problem and the scope of the methods for solving it have become greatly changed. The scope of the Garfield permit is insufficient for present needs and for future conservation."†

It may be well at this point to explain more in detail just what the project is.

The Hetch Hetchy Valley has already been described. At the lower end it was proposed to erect a masonry dam to catch and conserve as much of the flood waters from the 459 square miles of Sierra mountain drainage as the Valley could be made to hold. The height of the dam to be increased as time demanded.

Lake Eleanor lies eleven miles north and west of Hetch Hetchy, at an elevation of 4,715 feet. Here it was proposed to erect another dam to conserve as much water as possible from the drainage of 79 square miles of territory.

Cherry Valley is again separated from Lake Eleanor by a divide. It lies due

*Freeman Report, p. 31.
†Freeman Report, p. 144.

west of Lake Eleanor and at a slightly lower altitude. But by building a dam of sufficient height and boring a tunnel through the ridge it could be made to empty water when full, into Lake Eleanor. The Cherry Valley has 114 square miles of catchment area. It is a very important adjunct to the Lake Eleanor development.

Ultimately under the Freeman plan, it was proposed to bring the water from both Lake Eleanor and Cherry Valley, through an eleven mile tunnel, into the Hetch Hetchy main reservoir. Until this became necessary it was proposed to allow the water from these three sources to go down their natural channels to a point about eleven miles below the Hetch Hetchy Valley, where they all unite. By means of a small diversion dam, the water was to be deflected into an eleven-foot tunnel, eighteen miles in length, through solid granite mountains with its outlet at a point above Moccasin Creek. Here would be a fall of approximately 1250 feet where the principal power plant of the system would be located.

From the Moccasin Creek plant the water was to be conducted by a series of tunnels through the foothills; thence across the San Joaquin Valley in large steel pipes; through the Coast Range mountains with more tunnels; across the lower end of San Francisco Bay to the Crystal Springs reservoir in San Mateo County, belonging to the Spring Valley Water Company.

The principal difference between the Grunsky-Manson plans and those of Freeman was that the first two continued the pipes into San Francisco. They also provided for an independent distributing system throughout the city. The main difference in other respects between the original plans and those of Freeman was that the two earlier engineers proposed to bring the water out of the mountains in open canals for much of the distance. Regarding this Freeman says:

> "Summing up the total lengths of the conduits under these plans of ten years ago, we find a total of 28.6 miles in open canal, mostly

following the irregular contour of steep canyon sides; 13 miles of tunnel; 141 miles in distance covered by two 48-inch iron pipes . . . a distance of 182 miles. The present project has about 27 miles less because of more direct routes, with the complete elimination of all open canals, open reservoirs in the aqueduct line and the elimination of six miles of wooden trestle supports and steel bridges."*

In addition to these changes were enlargements of the tunnels and pipes. The original estimates were for the City of San Francisco alone, with a daily delivery of 60,000,000 gallons. Freeman provided for the whole metropolitan district extending from San Francisco south as far as San Jose and taking in all of the east bay cities. From 60 million gallons daily he planned for an initial delivery of 160 million gallons daily to be gradually increased to a final total of 400 million gallons daily.

Freeman believed that in order to work out well the project must be enlarged to give satisfactory results. He said:

"So long a project must be a large project with broad scope in order to work out well; in other words, in order to make an aqueduct 172 miles long into this difficult region commercially successful it must be of large capacity and planned on a generous scale."†

One of the arguments advanced by Freeman in favor of the Hetch Hetchy project was the matter of the softness of the water which he said would save the citizens annually approximately $511,000 a year in its soap bill. He says:

"In its remarkable softness, the Hetch Hetchy water presents an advantage that can be reckoned in dollars and cents in saving in soap to say nothing of its greater value for the human system or for non-formation of scale in steam boilers.

Whipple, one of the foremost authorities in the world on quality of domestic water . . . found by many experiments that one pound of average commercial soap would completely soften 167

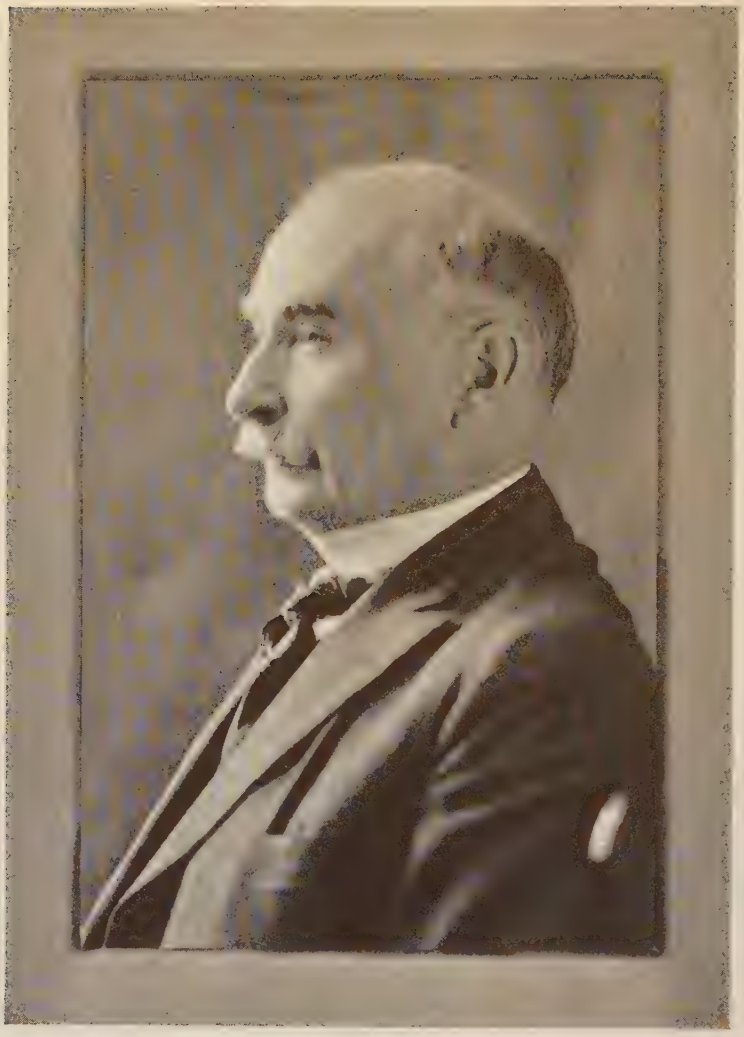
*Freeman Report, p. 142.
†Freeman Report, p. 142.

> gallons of water with a total hardness of 20 parts per million, like the stored Hetch Hetchy water. . . . This difference on a future total supply of 400 million gallons daily . . . is $511,000 per year for the whole metropolitan water district, which is 5% interest on ten millions of dollars."*

Freeman went into exhaustive comparison of the various other water projects available to San Francisco. Hetch Hetchy he decided was the cheapest and best and along the lines of good public policy. He concluded with the following:

> "The outlook and the state of the art have moved so fast that the Garfield permit has become practically worthless for the needs of the city. A new permit should be drawn in accordance with the scope of the works."†

*Freeman Report, p. 153.
†Freeman Report, p. 150.



M. M. O'Shaughnessy XV.

NEW MEN TAKE THE HELM

MANY CHANGES, KALEIDOSCOPIC IN effect, pertaining to the Hetch Hetchy project occurred in the year 1912. New actors appeared on the stage who bulk largely in its subsequent development. While one of the important figures in its earlier history was to fade out of the picture.

James Rolph, Jr., became Mayor on January 8, 1912. His election for four consecutive terms of four years each was as important as any other single circumstance which has contributed to the successful carrying on of the work. He has insured a continuity of the general program. It has been seen what disastrous results are liable to come to any project by a change of administrations.

He took a vigorous hold on Hetch Hetchy matters. Events began to move quickly towards the climax which resulted in the direct appeal to Congress for the rights the city desired. This came about through the quite unexpected refusal of Secretary of the Interior Walter A. Fisher, to grant the city the rights she needed to proceed with the Hetch Hetchy project.

After two years of preparation, assisted by many engineers, John R. Freeman's report was being sent to Washington piecemeal, during Rolph's first year in office. This report was received by the Board of Army Engineers, who in turn made their findings in favor of the use of the Hetch Hetchy Valley by the city for a future water supply.

Fisher's term of office was about to expire. While the Army Board, appointed especially to assist him in his decision, had reported favorably on the city's request, Fisher was not satisfied that he had the legal authority even though he accepted the Army Board's findings, to grant the city the privileges she desired.

The formal hearing of the city's application for these rights had been set for November 25, 1912. It was continued to November 30th, at which time dates were fixed within which additional reports were to be supplied. It was not until the middle of January, 1913, that the city had completed its showing. The matter had dragged along until near the end of Fisher's term of office and on March 1, 1913, he wrote to the Mayor and Board of Supervisors in part as follows:

> "On February 25, 1910, Secretary Ballinger required the city to show why the Hetch Hetchy Valley should not be eliminated from the said permit. . . . A hearing was held on May 25 and 26, 1910, and a postponement was granted until June 1, 1911.
>
> This was the situation when I became Secretary of the Interior in March, 1911. Shortly afterwards another continuance was granted until December 1, 1911 . . . the time was again extended until March, 1912. Again until June 10, 1912. Nevertheless on May 28, 1912, the city again presented a request for further extension of time. The formal hearing was set for November 25, 1912. In September, 1911, I personally visited Lake Eleanor and Hetch Hetchy."*

He concluded by declining to take any action in the matter. Between the terms of Hitchcock and Fisher, however, the citizens had voted two bond issues in furtherance of the project. The original $600,000 issue and later one in 1910 for $45,000,000 for the construction of the Sierra system. Considerable sums of money had also been spent in purchasing all lands in private holdings and otherwise carrying out the provisions of the Garfield permit.

*Journal of Proceedings, 1912, p. 113.

Mayor Rolph and the Board of Supervisors finally decided to abandon all further efforts to get what was necessary through Secretaries of the Interior and appealed directly to Congress for the rights the City needed. And a bill was introduced in Congress to this end.

Water matters were in a chaotic condition locally. Meters had not been installed at that time. The use of water had reached the limit of the Spring Valley System's capacity. The Panama-Pacific Exposition was being looked forward to when a large additional supply would be needed.

A month after Mayor Rolph took office, on February 5, 1912, the Board of Supervisors adopted an ordinance in which it said:

> "Public interest and necessity demand the acquisition of an existing public utility, to-wit: the existing property and plants of the Spring Valley Water Company. . . . To be used by the said city and county in connection with and as a part of the system of water supply known as the Lake Eleanor-Tuolumne system." *

On the same day an Advisory Water Committee was announced consisting of Judge Curtis H. Lindley, Chairman, Mayor James Rolph, Jr., City Attorney Percy V. Long, Judge Matt I. Sullivan, and Supervisors Thomas Jennings and Alexander T. Vogelsang to represent the city in negotiations with the officials of the Spring Valley Water Company for the purchase of that system.

Six months later, on August 9th, the committee made its report recommending an offer of sale for $38,500,000 be submitted to a vote of the people.

When the recommendation of the committee reached the Board of Supervisors a general debate ensued lasting over several sessions. The supervisors had not been through the months of negotiations. They could not be advised of the details and series of compromises which had resulted in the $38,500,000 offer.

Each supervisor approached the subject from a different angle. And the

*Journal of Proceedings, 1912, p. 113.

result was that the Board divided evenly 9 to 9 for and against the calling of an election and advocating the purchase at that figure.

The supervisors asked the Advisory Committee to make a proposal of $37,000,000. This threw the question of the purchase back again to where it was prior to the price having been agreed upon. With some modifications the company was willing to sell at $37,000,000. The supervisors would not agree to this. Judge Lindley resigned from the committee and Sullivan took the chairmanship. It was decided that an effort should be made to condemn the properties of the company through court proceedings. An act was introduced and passed through the Legislature making it possible to hold such a suit in one county, instead of all of the separate counties in which the company owned land. The magnitude of the undertaking, with all of the protracted delays that would ensue convinced them finally that this course would get no results. It was abandoned for direct negotiations again with the company but which led to no conclusion at that time.

Out of this situation emerged the man to whose lot it fell to realize the city's vision of Hetch Hetchy. M. M. O'Shaughnessy was made City Engineer on September 1, 1912.

City Engineer Marsden Manson had become embroiled in a number of disputes which weakened him with a new administration. It was due to his persistence from 1900 to 1912 that the city's hold on the Hetch Hetchy rights had been maintained. He had devoted practically his entire time to this work, to the exclusion of the details of his office. He was also in poor health. The result was that almost as soon as Rolph had taken office he was called upon to bring about a settlement of the question of who was to blame for the leaky condition of the Twin Peaks reservoir, a part of the city's auxiliary high pressure water system.

In order to settle this dispute, Mayor Rolph appointed a commission of three outside engineers to investigate the matter and make a recom-

mendation. Mayor Rolph wrote to the Board of Supervisors on June 17, 1912:

> "The Honorable Board of Supervisors, Gentlemen: With reference to the dispute between the Board of Public Works and the Healy-Tibbitts Construction Company over the leaky condition of the Twin Peaks reservoir, the details of which I have explained to you heretofore verbally, I beg to hand you herewith copy of my letter of even date to three engineers whom I have appointed to make survey of the work, namely: Messrs. M. M. O'Shaughnessy, W. R. Eckart and Howard C. Holmes, setting forth therein the points I feel necessary of explanation."*

O'Shaughnessy and Eckart decided that three-fourths of the blame attached to the city and one-fourth to the Healy-Tibbitts Construction Company. Holmes held that the entire blame lay with the city.

City Engineer O'Shaughnessy said:

> "A perusal of the testimony will disclose the following conditions: That the City Engineer's joint plans were defective and impractical; that the inspection by the inspectors of the Board of Works was careless; that the city accepted the defectively shaped concrete joints, inasmuch as they interposed no objection to their condition before pouring asphalt filling in same; and that finally the contractors, through careless concrete foremen, made defective form work in shaping the concrete joints."†

It was not disclosed that Manson had designed the reservoir. Efforts had been made in building the reservoir to place expansion joints at the bottom to preclude its cracking in case of another earthquake. But differences that arose over this and between Manson and City Attorney Long over the conduct of Hetch Hetchy matters at Washington finally led to the retirement of Manson and the appointment of O'Shaughnessy as City Engineer in his stead.

*Journal of Proceedings, 1912, p. 489.
†Journal of Proceedings, 1912, p. 622.

VICTORY

CONCENTRATING IN ONE LAST mighty effort the city won the thirteen-year Hetch Hetchy war. Congress granted San Francisco the rights she had been unsuccessfully attempting to secure through a series of Secretaries of the Interior. The result was what is known as the Raker Act.

One by one the city's adversaries had been worn down or routed from the field. The nature lovers, who had been persistent in their opposition at every hearing before various Secretaries of the Interior had tired. Many individuals had become convinced that there would not be the destruction of scenic effects as at first supposed.

The irrigationists had come to an agreement. The Raker bill in its final form had the approval of the representatives of the Modesto-Turlock Districts, although owners of other lands outside of these Districts appeared at Washington and opposed the grant.

The Spring Valley Water Company had subsided. A special clause in the Raker Act provided for the utilization of all of the water from sources near to San Francisco, before water from the Tuolumne could be diverted. This secured that company in its properties up to the full amount of their capacity. In addition the company's officials had become satisfied that the administration was genuinely in earnest in its effort to purchase the system.

Bills, prepared by the city's representatives, embodying provisions calculated to satisfy the city's most strenuous opponents were introduced by Congressman John E. Raker of California, a member of the Public Lands Committee. The Hetch Hetchy Valley lies in his district. In it are also located the Modesto and Turlock Irrigation Districts.

The first of these bills was known as H. R. 112 and was introduced in the House of Representatives on April 7, 1913. A second one, H. R. 4319, was introduced on April 25, 1913; a third, H. R. 6281, on June 23, 1913; a fourth, H. R. 6914 was introduced on July 18, 1913; finally the grant itself, H. R. 7207. They were in turn referred to the Committee on Public Lands and ordered printed. Hearings on the bill began at Washington, June 25th.

The first bill had been superseded by the second and third before the actual hearings opened before the Committee of the House. The other amendments and changes were made by the Committee as the result of its deliberations. The Congressional Committee consisted of:

Scott Ferris, Oklahoma, Chairman

James M. Graham, Illinois	Andrew R. Broderick, Pennsylvania
Edward T. Taylor, Colorado	Denver S. Church, California
John E. Raker, California	Irvine L. Lenroot, Wisconsin
Horatio C. Claypool, Ohio	Burton L. French, Idaho
Harvey B. Ferguson, New Mexico	William L. LaFollette, Washington
Carl Hayden, Arizona	William Kent, California
Samuel M. Taylor, Arkansas	Nicholas J. Sinnott, Oregon
Lathrop Brown, New York	Jacob Johnson, Utah
Tom Stout, Montana	Charles M. Thomson, Illinois
Perl D. Decker, Missouri	James Wickersham, Alaska

D. Cameron Campbell, Clerk

In opening the hearing Chairman Ferris said:

"I think to avoid confusion it would be well to state that this bill is in lieu of H. R. 112, and an amended bill in lieu of H. R.

DOES THIS BEAUTIFUL LAKE RUIN THIS BEAUTIFUL VALLEY

THE REAL FACTS ABOUT HETCH HETCHY

THE campaign carried on against the proposition to allow San Francisco to get a supply of mountain water from the Hetch Hetchy valley should be recognized for what it is

It is nothing more than a corporation campaign to maintain the grip of an oppressive and inadequate private water monopoly upon the city of San Francisco and to prevent the city of San Francisco from getting good and abundant water under city ownership

There are no people in the world so proud of the beauties of their State as Californians There are no people in the world who would be so loath to interfere in the slightest degree with the beauty of any of their State s attractions

Long before the United States government began to make national preserves in California the State of California was making State preserves to protect in every way the wonders and natural attractions within its borders

The Yosemite was a State park long before it was a national park It was made a preserve by the State of California and was handed over to the nation as a free gift when the nation definitely entered upon a policy of national parks and preserves

How unreasonable it is, therefore, to assume that these Californians, with all their pride in their natural scenery and their care of their State attractions, are anxious to injure a State attraction and to that extent to injure their beloved State and their blessed selves

And yet this general assumption is not more absurd and unreasonable than the specific statement which declares that a beautiful valley will be marred by a beautiful lake

There is a certain class of citizens throughout this country and doubtless throughout every country who may be called chronic opponents They never originate ANYTHING and they always oppose EVERY THING

The shrewd corporation campaign which is being conducted in the interest of the Spring Valley Water Company's private monopoly has brought to its aid this class of chronic opponents These chronic opponents are opposed to putting a lake in the Hetch Hetchy valley no matter how much the lake would beautify the valley

These chronic opponents would be equally opposed to removing a lake from the Hetch Hetchy valley if a lake already existed there

As a matter of fact they would have a great deal better argument from the standpoint of beauty and general usefulness for opposing the removing of a beautiful pure-water lake from this mountain valley than they have for opposing the locating of such a lake in such a valley.

Ninety nine per cent of the people in the State of California are actively in favor of allowing San Francisco, the great central city of the State, to secure an adequate supply of pure water from the Hetch Hetchy valley

As a matter of fact, the only opposition to the project is interested corporation selfishness on the one hand and ultraconservative sentimentalism on the other hand

Los Angeles has been allowed to take its water in the mountains from the Owens River Seattle has been allowed to take its mountain water from the Cedar lake and river in the Cascade Mountains. San Francisco asks only what has been granted, and properly granted, to other cities, and what is doubly necessary to San Francisco because of San Francisco's pressing needs and because of the great difficulty of securing a sufficient quantity of water elsewhere

A righteous cause always eventually wins. Therefore, sooner or later, San Francisco will be allowed to get its water from the most natural and reasonable source which is the Hetch Hetchy valley

But there are potent reasons why this permission should be given sooner and not later

San Francisco has not at the present day sufficient water to meet the needs of her population

In the outlying districts the housewives cannot get from the water taps the fluid for ordinary domestic purposes There is no opportunity for growth in the suburbs

The Spring Valley Water Company, holding a monopoly of the supply and charging more for water than is charged in any other city in the world, has admitted by scare advertisements and drought regulations that it cannot meet the demand

But if this is the present condition, what of the immediate future?

San Francisco has just begun to grow She has recovered from her great disaster of 1906 She is practically rebuilt

And almost at this touch of time, the Panama Canal is to be opened to the world. Through that canal thousands and hundreds of thousands of men and women are to pass, seeking California, the new Hesperides

A large proportion of these thousands have San Francisco as their goal There they expect to make their homes

But what hope have they of establishing themselves and their families in a city where the suburbs are denied water, or where home seekers are met with water famine notices, declaring that a great thirst is impending and that drought has claimed the city for its own.

Even should the Senate pass the Hetch Hetchy bill this week the exigencies of delay are many There will be litigations before the contracts for construction can be awarded

And when all litigation cobwebs are swept away—when the bonds voted by San Francisco have been converted into gold—when the contracts for the great work of dam building and pipe laying and tunnel boring have been awarded—there will be from four to six years that must pass in the toil and remuneration of labor before the city can expect to enjoy the pure delights of Tuolumne' cooling flood.

So it is high time that San Francisco's twelve year struggle for this water privilege was granted The city hope has been too long deferred A less courageous community would have been made heart sick.

But San Francisco is undaunted in this struggle as in her days of great disaster The eye of her hope is undimmed She has not grown cynical or sour during her years of expectancy

She is still confident that the Congress of the nation will do her the simple justice she requests

She submits that the Hetch Hetchy was first suggested as her natural reservoir site by the unbiased scientists of the Geological survey,

She offers the testimony of the most eminent army and civilian engineers that the Tuolumne supply is incomparably superior to all other sources in the matters of cost, desirability, and the proportion of general good to individual harm.

And she points to the men and women of the land who are earnestly and unselfishly supporting her desires as proof enough that those desires are honest and that her needs are urgent

To reopen the discussion would merely be to arrive eventually at the same conclusion. Why delay further? Is not twelve years sufficient time for investigation and discussion? What more eminent engineers can pass on the problems involved than those who already have made their figures and spoken their minds? Is there another project offered that would not engender sharper animosities?

The United States Senate, with due consideration for the needs of the people of San Francisco and the desires of the people of California, with due regard for the comfort and convenience of the visiting public of our country and of foreign countries, with proper consideration for the dignity of our people as the host of visiting nations, should pass the Hetch Hetchy bill promptly, and pass it in an open handed, open-hearted American manner

A special Washington edition of the San Francisco Examiner was laid on the desk of every member of the U. S. Senate the day the final vote was taken on the Raker Act. The editorial page is reproduced by special permission of the Examiner.

PLATE XVI.

4319, which were formally introduced by Representative Raker at this session of Congress. The bill H. R. 6281 represents the culmination of ideas of the departments, the representatives of the City of San Francisco, and the irrigation people of the San Joaquin Valley who have certain prescribed rights in the water. The chairman is informed that the record will show that this is the agreed bill between them."*

The first bill was a skeleton bill of ten pages. It gave San Francisco the right to construct and maintain reservoirs at Hetch Hetchy and Lake Eleanor; to exchange lands with the government as prescribed in the Garfield permit; a right of way 250 feet in width through the Yosemite National Park and forest reserve for a distance of about sixteen miles, subject to the Park regulations. Section 6 of the Act, over which as finally amended there has been much controversy, reads in part:

"That the City and County of San Francisco is prohibited from ever selling or letting to any private corporation or individual, except a municipality, the right for such corporation or individual to sell or sublet the water sold or given to it or him by the city."

Bill No. H. R. 4319 was shorter by two pages than its predecessor. It eliminated the provision for the exchange of lands between the city and the Federal government as provided under the Garfield permit. Section 6 as above quoted remained practically unchanged.

The third and fourth bills extended to twenty-six pages. Power plants, water-power and electric works were mentioned for the first time in these later bills. The city was to construct roads and keep them in repair, clear its right of way from inflammable material. Section 6 as already quoted had the following words added to it:

"Provided, that the rights hereby granted shall not be subject to sale, assignment, or transfer to any private person, corporation or association."

*Hearing, Committee on Public Lands, 63d Congress, p. 1.

The Modesto-Turlock Irrigation Districts were protected with the following conditions:

> "That said grantee shall recognize the prior rights of the Modesto and Turlock Irrigation Districts as now constituted . . . or as they may be hereafter enlarged to contain an aggregate not to exceed 300,000 acres of land to receive 2,350 second feet of the natural daily flow of the Tuolumne River, measured at La Grange dam, whenever it can be beneficially used by said Irrigation Districts, and that the grantee shall never interfere with said rights."

Other provisions were added in considerable numbers during the weeks that followed. One of the most important was that relating to the development and sale of electrical energy. Power was to be sold to irrigation districts or municipalities (which purposes shall not include sale to private persons or corporations) which was followed by the following proviso:

> "Provided, that said grantee shall satisfy . . . irrigation districts for pumping, . . . the needs of municipalities . . . before it may dispose of any excess electrical energy for commercial purposes."

An unexpected development interrupted the somewhat prosaic hearings before the committee. A telegram was received and read from Eugene J. Sullivan of San Francisco. It said:

> "Honorable Scott Ferris, Chairman,
> Committee on Public Lands,
> Washington, D. C.
>
> Sir: Absolutely no water shortage here. Such allegations are framed for political purposes. No need for haste in Hetch Hetchy matter. City officials are merely deceiving your Committee as they have already deceived Mr. Freeman and Army Board. We shall have unfortunate scandal. Army Board accepted city's false data in good faith, but did not give sufficient time for personal investigation. Respectfully ask time to complete data and present

proof to your Committee. Please consider this an official communication.

Eugene J. Sullivan, President,
Sierra Blue Lakes Water & Power Co."*

Sullivan was summoned by telegraph to come to Washington and appear before the Committee. He arrived a week later. He charged that City Engineers Grunsky and Manson had made false reports concerning the possibilities of the Sierra and Blue Lakes Water & Power Company, of which he was the president. He said this was done in order to belittle a source of supply much cheaper than the Hetch Hetchy and readily available. He caused some amusement in his opening address when he said:

"To the telegrams from the petty politicians of San Francisco pay no heed. It is beneath your dignity and mine. An election is approaching. They lack political thunder. The Hetch Hetchy is a name to conjure with; it is an old stand-by. The remarks by the Honorable Secretary Mr. Bryan, at a banquet last week about it being, he always thought, some kind of an Indian war dance was received by the people of the western city with a smile of approval."†

A large part of the report of the Committee hearing is taken up with the examination of Sullivan regarding his charges: what his reasons were for making them: what facts he could produce to substantiate them. He consumed a full day of the Committee's time.

As the result of the investigation and statements published at the time about Sullivan and Taggert Aston, an engineer employed by Sullivan, a libel suit was filed by Aston against the San Francisco "Examiner," which was later tried in the Federal courts in San Francisco.

When the bill finally came up before the Senate San Francisco was represented by Mayor Rolph, Supervisor Alexander T. Vogelsang, City Engi-

*Hearings Before Committee on Public Lands, p. 179.
†Hearings Before Committee on Public Lands, Part 2, p. 283.

neer M. M. O'Shaughnessy, City Attorney Percy V. Long, John S. Dunnigan, Clerk of the Board of Supervisors, and others. The San Francisco "Examiner" published a special Washington edition on the morning of December 2, 1913, which was laid on the desk of every member. It contained on its first page the approval of Vice President Thos. R. Marshall, Secretary of State Wm. Jennings Bryan, Secretary of the Interior Franklin K. Lane, and Secretary of Agriculture D. F. Houston.

Vice President Marshall wrote:

> "It has been declared improper for the presiding officer of the Senate to express an opinion upon pending legislation, although why this is so, in view of his right to cast a deciding vote, I cannot see.
>
> Without knowledge of the Hetch Hetchy project, and moved solely by sentiment I inadvertently said if it came to me I would vote against it. Since then I have examined the bill and the facts as found upon which it is based. I now believe the measure meritorious, and if it needs my vote it will be so recorded."

The work done by San Francisco's representatives in educating the members as to what the bill actually contemplated was shown in this and many other instances. Secretary of State Bryan in his statement said:

> "The Federal government has co-operated with the cities on the Pacific Coast in providing a water supply essential to the prosperity and growth of vast communities of men. I am in favor of the Government, in conjunction with the State, providing by the bill now before Congress and indorsed by the Departments of the Interior and Agriculture, granting San Francisco a reservoir right of way in the Hetch Hetchy Valley, California."

The following telegram, dated Modesto, Cal., Aug. 13, 1913, and signed by C. S. Abbott, Secretary Joint Meeting of Directors Modesto and Turlock Irrigation Districts; P. H. Griffin, Attorney Turlock Irrigation District; E. R. Jones, Attorney Modesto Irrigation District; and L. W. Fulkerth; was

given the Senate Committee by Representative Denver S. Church and reproduced in the special edition of the "Examiner":

> "At a joint meeting of the Board of Directors of the Modesto and Turlock Irrigation Districts, held in Modesto this day, the action of the committee sent to Washington to represent the districts was fully endorsed, and the Raker bill, as recommended by the House Committee, was approved. The boards also passed resolutions requesting our representatives in Congress to use their best efforts to pass such bill and oppose the passage of any bill granting San Francisco the Hetch Hetchy which does not contain provisions recognizing and protecting the rights of the districts in the Tuolumne watershed, as provided in the bill.
>
> Stanislaus County Board of Trade passed resolutions on Monday night in effect that no further opposition would be made to the Raker bill. People generally of the irrigation districts believe that under all the circumstances the Raker bill should be adopted without material amendment and that the strongest opposition should be made to any change in the bill which would eliminate any of the conditions in favor of the districts."

Among others who championed San Francisco's cause in the Senate were Senator Key Pittman of Nevada, Senator George C. Perkins of California, Senator George W. Norris of Nebraska, Senator Charles S. Thomas of Colorado, Senator Henry L. Myers of Montana and Senator Wm. H. Thompson of Kansas.

In the House the city's friends included Champ Clark, Speaker of the House; Representative Wm. Kent of California; Representative Scott Ferris of Oklahoma; Representative Julius Kahn of California.

Not connected with either of the two branches of the government were citizens of national reputation who assisted the city materially. Among these were James D. Phelan, Gifford Pinchot, Andrew McFarland Davis of Cambridge, Mass., Rupert Blue, surgeon general of the United States, Samuel Gompers, president of the American Federation of Labor.

The San Francisco Labor Council sent a circular letter over the signature of its secretary, John A. O'Connell, to affiliated organizations throughout the country urging their co-operation. From every part of the United States they sent letters and telegrams to their representatives in the House and Senate.

In addition to the special Washington edition of the San Francisco "Examiner" William Randolph Hearst gave the full strength of his personal, political and newspaper influence to assist in the passage of the Act. His papers secured petitions signed by 15,000 representative citizens which were presented to Congress.

The Act, H. R. 7207, was passed in the Senate by an overwhelming majority and signed by President Woodrow Wilson, December 19, 1913.

An analysis of the Act published by Marsden Manson sets out the benefits, obligations, payments, etc.

BENEFITS.

The right to use "free of cost" rock, earth, gravel, tufa, sand and materials of like character. Sec. 1, latter part.

The right, under the "binding obligations" and the other requirements of this Act, to divert beyond the San Joaquin Valley no more of the waters from the Tuolumne watershed than, together with the waters which it now has or may hereafter acquire, shall be necessary for its beneficial use for domestic and other municipal purposes (not industrial). Sec. 9 (h).

The right to develop and sell surplus power at "not less than cost" after meeting the demands of Turlock and Modesto Irrigation Districts and included municipalities "at cost." Sec. 6, Sec. 9 (l) and (m).

BINDING OBLIGATIONS ON THE CITY IN FAVOR OF THE IRRIGATION DISTRICTS AND MUNICIPALITIES.

This grant—a binding obligation in favor of Turlock and Modesto Irrigation Districts. Sec. 10.

Recognition of the right to 2350 second-feet in favor of the claim of Turlock and Modesto Districts. Sec. 9 (c).

The stored water necessary to maintain a flow of 2350 second-feet whenever the districts can beneficially use the same to be liberated free of cost. Sec. 9 (c).

The grantee to recognize the right of the said districts to a flow of 4000 second-feet for sixty days of the snow-melting period between April 15th and June 15th, of each year and the grantee to liberate stored water to maintain this flow if necessary for beneficial use or storage. Sec. 9 (c).

Additions to the above amounts of water to be made at cost of storage if said districts require the same. Sec. 9 (d).

Secretary of the Interior to fix prices of stored water released under (d) to districts. Sec. 9 (e).

Surplus water for power to be returned, without cost to said districts, to Tuolumne River above La Grange dam. Sec. 9 (d) last proviso.

All measuring apparatus to be constructed and maintained by the grantee. Sec. 9 (i).

San Francisco must sell power at cost to Turlock and Modesto Irrigation Districts and included municipalities. Sec. 9 (l).

San Francisco prohibited from letting or selling the right to distribute water or power except to an irrigation district or municipality nor to sublet or assign the rights to any person, corporation, or association. Sec. 6; see also Sec. 5.

PAYMENTS BY THE CITY TO THE UNITED STATES.

Full value of all timber cut to be paid for. Sec. 4.

Bridges and fences to be built and maintained. Sec. 4.

Rights of way to be maintained as fire lanes. Sec. 4.

Government to have free use of railroads, roads, trails, etc. Sec. 4.

Works and rights to be forfeited in case of cessation of operations for a certain period. Sec. 5.

All roads, trails, etc., to be assigned to the Government free of cost. Sec. 7.

Annual payments of $15,000.00 for ten years, $20,000.00 for ten years, and thereafter $30,000.00. Sec. 7.

San Francisco to pay cost of inspection. Sec. 9 (a).

San Francisco to provide adequate water for camping ground. Sec. 9 (i).

Secretary of the Interior to lease power privileges unless developed as prescribed. Sec. 9 (n).

San Francisco to build and maintain scenic roads and trails in Yosemite Park. Sec. 9 (p).

San Francisco to reimburse the Government for actual cost of maintaining roads and trails. Sec. 9 (q).

San Francisco to furnish water at cost to occupants of Park within one mile of reservoir. Sec. 9 (q).

San Francisco to pay expense of investigations for the enforcement of rights, benefits and obligations imposed by this Act. Sec. 9 (r).

San Francisco to convey to the Government free of cost and divested of all encumbrances and liens all its lands in and adjacent to Yosemite Park which were acquired for exchange. Sec. 9 (t).

San Francisco to sell water at cost to War Department. Sec. 9 (u).

BENEFITS TO WATER AND POWER CORPORATIONS.

Surplus power after supplying Turlock and Modesto Districts at cost must be sold at "not less than cost." Sec. 6; Sec. 9 (l) and (m).

Local water supplies to be developed and utilized to maximum capacity before water from Tuolumne watershed can be diverted beyond San Joaquin Valley. Sec. 9 (h).

IF PEOPLE CONTROL UTILITIES WHY OWN THEM?

NEARLY HALF A CENTURY OF ALmost constant litigation between the city and the Spring Valley Water Company quite suddenly ceased in 1916. It is an historical fact of sufficient importance to warrant investigation. It is indicative of a great change that is taking place.

What had happened to remove so effectually the cause of irritation?

It would seem almost incredible that the causes of years of strife could be so readily adjusted. Or, to state it in a different way, that there was in fact so little between the people and the company that with very slight rearrangement their differences could be compromised. It resolved itself down to one word—*Confidence.*

Figuratively a "third man" had appeared in the ring. The people by their votes had created the State Railroad Commission. This body had authority to make decisions between the corporations and the public and to enforce them. It was an appointive body from among the people, yet removed from the pressure of local entanglements. This cessation from litigation was general throughout the state.

After a decade of experience the question has arisen whether the people have not builded better than they knew; solving the problem of municipal

ownership, with its enormous bonded debts, by a substitution of control over service and rates, in lieu of actual ownership?

It used to be said that the Southern Pacific Company at one time owned 51% of the stock of the Pacific Mail Steamship Company in order to control service and freight rates out of the port of San Francisco. Whether it were true or not it will serve to illustrate the point.

If the Southern Pacific could have controlled service and rates without the expenditure of a dollar is it not unthinkable that it would invest a fabulous sum in an enterprise in which it was not particularly interested—which was foreign to the subject of railroading generally?

Yet is not this exactly the position of the people regarding utilities? If through the Railroad Commission and the like they can secure service and extensions and hold the rates down to a point that just barely enables utility corporations to function what more can they ask?

The people are not interested in the conduct of business enterprises. Government is not constituted for the purpose of carrying on competitive undertakings. Why should the people burden themselves with enormous bond issues, and obligate themselves to pay the interest on them unless there is some object to be achieved?

From the manner in which the people neglect to vote at elections the average citizen is little interested in such matters. Will the people not welcome the idea of allowing corporations to take care of the technical details of a highly organized business, if once convinced that public utility rates are being kept down and the service all that could be expected under public ownership?

Is it not an answer and a concession to the Socialists? Through the courts, railroad commissions, interstate commerce commissions, Federal trade commissions and the like, the people today are controlling all public utility corporations, calling to account many private concerns suspected of operating in restraint of trade and against public policy.

Those who have followed the history of the troubles between the water company and the city during the preceding pages will realize that there were two main causes of trouble and dissatisfaction. These were:

First—On part of the people: Inadequacy of supply and rate charged by the company.

Second—On part of the company: The inadequacy of rates allowed by the supervisors.

Throughout all the later years of litigation the company had complained that the latter was responsible for the lack of supply. The Spring Valley contended that because of the low rates fixed by the supervisors it was unable to finance the extensions and betterments needed to keep ahead of the demand.

With the advent of the State Railroad Commission that body took the position that if corporations had to finance betterments and give the service demanded, they must necessarily be placed in a position of earning sufficient to make their securities marketable.

The Supreme Court had held that less than a 6 per cent return was confiscatory. The State Railroad Commission by being slightly more liberal and allowing corporations to earn between 7 and 8 per cent made it possible for utility companies to find a ready sale for securities and finance improvements in advance of the actual need.

Some recent decisions of the State Railroad Commission of California show how it has worked out:

Decision No. 13,227: "The Commission having found that the Midland Counties Public Service Corporation was making a return of 9.22% . . . it has established rates that will produce a return of slightly below 8%."

Decision No. 12,816: "The Santa Paula Water Works is entitled to a reasonable return. . . . Estimates of the revenues of the utility indicate a return of 5.61%. It is apparent that the utility is entitled to an increase in rates."

Case 1796: Regarding the application of the City of Los Angeles for a reduction of telephone rates. The Commission said:

"The service is found by the Commission to have been inadequate, but the return earned by the Company is also inadequate. The Company is being penalized for the present inadequate service by rates which permit it to earn a sum which is far below what is generally held to be fair."

Decision No. 12,781: In the case of the Southern California Edison Company the Commission cut $2,200,000 out of the annual return of the Company in 1923.

As is to be expected all of the Commission's decisions have not been popular. But that body is gradually acquiring a fund of information about the histories of all of the utility corporations. This will enable it to establish rates as nearly equitable as it is possible to make them and still secure the service the people demand. A line of decision and precedents is also being established.

There is also another phase of this same subject—the investment by the public in ever increasing numbers in public utility securities. Formerly privately owned public utilities were generally held in the ownership of a comparatively few people for their individual profit. Today a very great change has come about. The speculative element has been taken out of public utility financing through the operation of the Railroad Commission. The public, with confidence in the Commission's rulings, has invested by the thousands in this class of securities. What dividends are declared are divided among a multitude.

With the rapid growth of cities in California money must be available in ever increasing amounts whether the ownership of public utilities be under municipal or stock control. Financing of extensions, the development of the source of supply and betterments follow each other in rapid rotation. Where municipalities own several utilities, if the city's growth is fast, bond issues will have to be voted at regular intervals. Whether public confidence will make money available for municipal operations as fast as it is needed, or whether the people will allow the utility corporations to carry on their highly

organized business and finance themselves by the sale of securities to the investing public under the supervision of the Railroad Commission, is one of the questions that time alone will answer.

To give an idea of the great change that has taken place in the regulation of utilities since the last century, at which time the only hope for the people seemed to be in the outright ownership and operation of all public utilities as a matter of self-protection, the following is quoted from a local newspaper:

> "In its first attempt to standardize auto ferry transportation charges, the State Railroad Commission yesterday slashed the rates of the Golden Gate Ferry Company from $1 to 65 cents, and those of the Rodeo-Vallejo Ferry Company, operating across Carquinez Straits, from 75 cents to 55 cents per automobile.
>
> The passenger fare on the Rodeo-Vallejo system was reduced from 15 to 12 cents, while the 15-cent toll for passengers on the Golden Gate ferry was allowed to stand.
>
> In making its order, President Harley W. Brundige announced that the Commission had fixed 11 per cent profit as a fair return on their investments. The Golden Gate and Rodeo-Vallejo Companies were making respective profits of 22.2 per cent and 36.7 per cent a year. He said:
>
> 'The decision was the result of a series of hearings and investigations by the State body to fix auto ferry rate standards. The matter was brought up on the Commission's own motion and not on the complaint of other firms or individuals.'"

Shades of Vanderbilt and his famous "Public be damned" policy! Here is a body which, of its own volition before the public had made an outcry, or even indicated that auto ferry charges were too great, had reduced the fares in the interest of the people, while a sufficient margin of profit was left to make the business profitable to the investors.

Mark Sullivan writing recently from Washington, said:

> "American business as it is today is not the same business which the people felt ten years ago must have a Federal trade commis-

sion to watch it; nor is it the same business against which Roosevelt used to thunder 25 years ago. Partly business has been chastened by the operation of these very agencies of control; partly business has found it best, as a commercial matter, to change its ways.

Twenty years ago there was a most intent suspicion of anything like cooperation among the different units of business in any trade. The faintest gesture towards cooperation caused alarm.

At this moment there is pending before the Interstate Commerce Commission a proposal to merge five eastern railroads into one. Twenty years ago such a proposal would have been impossible. No railroad executive would have entertained the idea; or if he had he would have kept it to himself. If he had given public utterance to it the public would have cried out. If he had taken steps toward it the government would have pursued him."*

In almost a similar strain, Herbert C. Hoover, Secretary of Commerce, in an address delivered in San Francisco, June 17, 1925, said:

"The majority of men who dominate and control the electrical utilities themselves belong to a new school of public understanding as to the responsibilities of big business to the people. The industry does not resent constant inquiry and constant public concern, for public interest. Glass pockets are the safety of the industry as well as the public."

While the Secretary was speaking before a meeting of electricians, his mind evidently was working parallel to what has been previously said regarding the change in attitude towards public utilities generally. He says in another part of his address:

"No one can survey the work of the State commissions and the instructive series of court decisions concerning their rulings as a whole without realizing that we are gradually developing a science of regulation and of understanding on one hand of the means of

*S. F. Bulletin, May 16, 1925.

drawing the fine line between minimum rates to the people and on the other hand of such a reasonable profit to the industry as will stimulate its advancement. It is my belief from this investigation that the Public Service Commissions with very little just criticism are proving themselves fully adequate to control the situation. The laws as written in the state statute books are sufficient to protect both the public and the industry, the two parties to the utility contract."

And again:

"It seems to me that there are two final tests of this question. The first is: Is the service adequate and is the industry progressive in its provision for future need? The second is: Are the rates reasonable in themselves and are the profits taken by the industry upon the capital invested extortionate?"

Finally he said:

"We make progress in democracy only by experiment. My point is not to argue the municipal ownership question which is often a problem of local factors but to emphasize the importance from a national point of view that the whole country should have available real knowledge of how these experiments result. Moreover, the best assurance to the citizen of those cities is the independent check on accounting service and finance by the State Commissions."*

From another source:

"In conformity with orders issued by the State Railroad Commission a further reduction in gas rates in the territory served by the Pacific Gas and Electric Company becomes effective. To the users at Sacramento the latest reduction amounts to 4 cents per 1000 cubic feet. This follows a reduction of 8 cents ordered as of October 22d.

The Railroad Commission ordered this revision of gas rates on its own motion . . .

*Printed Address Before 48th Convention of the National Electric Light Assn.

> Regulation of utility charges thus enforced by an alert public service commission is one of the most effective of governmental activities. It gives the people the control of their utilities without the responsibilities or risks of ownership. If there are losses the stockholders of the corporations stand them, to prevent losses those same stockholders summon technical experts and skilled managers of business to their employ; and what is more important they keep political exploitation and that most malignant cancer of government operation, loafing and malingering on the job, out of their business. If the returns for service are over a reasonable amount the consumers get them, not the companies or their stockholders. This has justified the Railroad Commission in its frequent statements that there are no longer excessive profits for the promoters or managers of utilities; neither is there exploitation of the public in high rates or charges. . . .
>
> The consumers are waking up. And they prefer government regulation to government adventures in ownership and operation."*

It was not until 1916 that the State Railroad Commission actually took over the fixing of water rates in San Francisco. While the Commission had been in existence for a number of years, the Water Company was collecting rates in excess of those fixed by the Board of Supervisors under a Federal court order. With the termination of that action, whereby the Water Company was awarded over $2,000,000 in impounded moneys, the State Railroad Commission took up the work.

Not only have the rates fixed by the Commission been satisfactory, but the Commission has been recognized as the general arbiter on these and allied matters to such an extent that appeal to the courts has not been resorted to since the Commission took charge.

One gas rate decision in which the city is interested, involving more than $2,000,000, still is undecided. It had been begun before the advent of the

*Sacramento Union, Dec. 1925.

STATEMENT ISSUED BY COMMISSION IN WARDING OFF AN ATTEMPT TO STAMPEDE IT.

In view of the attitude taken by the press and by official and civic organizations on both sides of the bay in the matter of the establishment of another trans-bay ferry service, it may be well to say a few words in the hope that there may be brought about a clearer conception of the facts than apparently exists at this time.

The Railroad Commission of the State of California is created by the Constitution of the State and its powers and its duties are defined by the Constitution and by the laws. This Commission has no arbitrary power. It can act only upon evidence duly and regularly presented under oath during the course of a hearing, when witnesses may be subjected to cross-examination to determine the extent of their knowledge or the soundness of their opinions. In this respect the Commission differs from a trial court only in two particulars -- the Commission is equipped with an expert staff which makes impartial investigation in certain cases and testifies to the facts so found exactly as do all other witnesses, and in the further particular that the rules governing the admissability of evidence need not be so strictly enforced. But like the courts, matters which are outside the record can not be considered by this Commission. Decisions must be based upon testimony presented in the manner provided by law.

When, as here, an applicant comes before this Commission seeking a certificate of public convenience and necessity the burden of proof is upon the applicant. His showing must be positive and conclusive. He must prove exactly what is required by public convenience and necessity. He will get what he proves in the record made before this Commission -- exactly that and nothing more. This applies equally to all applicants for such certificates.

Facts, if outside the record, are of no avail. One concrete fact, which can be examined and analyzed, brought regularly into the record in a public hearing, is worth more than all the propaganda that may be broadcast, all the uninformed opinions that may be uttered, and all the ineffectual attempts at intimidation that may be tried by those who fancy they serve a personal or a community end.

The members of this Commission are acutely aware of the power of the press; they also are fully convinced that without the sustaining influence of sound public opinion such agencies of government as this Commission cannot expect to continue in existence but each commissioner when entering office subscribed to an oath promising to perform the duties of his office in accordance with the Constitution and the laws of California and of the United States. They are of the opinion that they may not in this or in any other instance turn these duties over to the editors of the daily newspapers, however able and patriotic these editors may be, or to the governing bodies of the various cities or to the officers of civic organizations, even when it seems clear that all of them are actuated only by praiseworthy motives.

The matter now before the Commission will be determined in exactly the same manner as any similar application, solely upon its merits as disclosed by the evidence in the record.

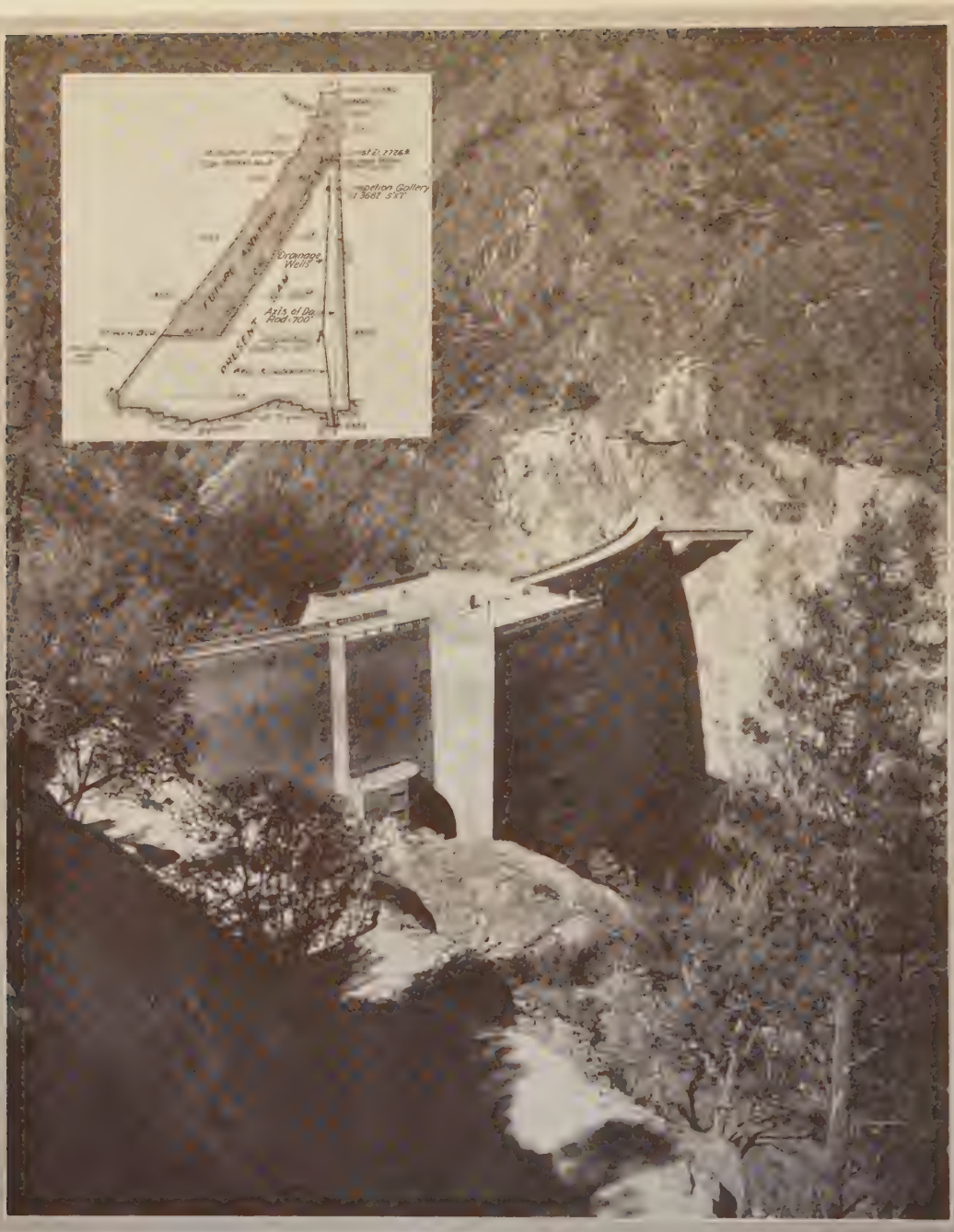
Efforts to influence the Commission's decision by newspaper campaigns, by community or other drives, by threats to destroy the Commission or to discredit or to drive from office the members of the Commission, while admittedly unpleasant and unpalatable, can, of course, have no effect in securing a decision which is not based solely upon the facts presented in the regular way and incorporated in the record of this case.

PLATE XVII.

The above was issued by President Harley W. Brundige and was concurred in by commissioners Leon O. Whitsell, Clyde L. Seavey and Ezra W. Decoto, the fifth place on the Commission being vacant, on February 18, 1926. It was in the nature of a reply to a well organized attempt to rush the Commission off its feet.

Commission. For seven years it has been working its way through the Federal courts to the Supreme Court of the United States. Lately it was referred by that tribunal back again for a retrial of certain phases of the proceedings.

Looking backward to the last quarter of the last century when utility corporations were under little or no restraint, and comparing conditions as they were then with the views that have been expressed, may one not well ask: Have the people discovered a way which avoids the necessity for public ownership with the heavy obligation to finance and the burden of operation?



The O'Shaughnessy Dam.

PLATE XVIII

REALIZATION

NOW, THAT THE WAY FINALLY WAS opened by the passage of the Raker Act for the city to proceed with the construction of its Hetch Hetchy project, a serious study of the job was begun. Plans had been drawn in turn by City Engineer C. E. Grunsky, City Engineer Marsden Manson and Consulting Engineer John R. Freeman. The responsibility for its construction devolved on their successor, City Engineer M. M. O'Shaughnessy.

The magnitude of the undertaking was complicated by the inaccessibility of the region in which operations were to be carried on. At the risk of repetition, but in order to set clearly before the eyes of the reader just what this meant, the following description, as given before the Congressional Committee by Edmund A. Whitman of Boston, representing the Appalachian Mountain Club, is recited:

> "I cannot attempt to describe to you the character of the country. It is some of the roughest country that God ever made. . . . There are only three places in the entire park where you can take care of horses. . . . As you pass up the Hetch Hetchy Valley and look east you see the Rancheria Mountain rising in front of you, too steep for climbing, up 2,000 feet. . . .
>
> I have gone out from the top of the mountain there and dangled my feet down into the scenery from a position where I could look

> down 5,000 feet to the river below and across to the other bank, a distance of some ten or twelve thousand feet."*

Here was a country which mountain climbers found difficulty in traversing, with only a few spots in which horses could be cared for, where it was proposed to build dams and electric plants, transport all manner of machinery and equipment, requiring accommodations for hundreds of workmen. It seemed almost fantastic.

Those, however, who have seen electrically driven drills boring into granite and the effect of dynamite, know that no country is inaccessible where these essentials are furnished. City Engineer O'Shaughnessy therefore began his plans by first building a road so that he could get men and materials to the scene of operation and then generate the electricity to furnish the power necessary in the construction work.

The first contract of any considerable moment was awarded to the Utah Construction Company to build a road nine miles in length from the Hog Ranch (Portulaca) to the Hetch Hetchy Valley at a cost of $180,000. In his report of March, 1916, O'Shaughnessy says:

> "Previous to the construction of this road, the Hetch Hetchy Valley was accessible only by trail."

There was an old wagon road that led to the Hog Ranch, this was the nearest approach to the valley and the Hog Ranch was over sixty miles from the nearest railway. But between August, 1914, and February, 1915, this road of nine miles was completed. It was possible then to approach by vehicle a point on the cliff directly above where it was proposed to build the Hetch Hetchy dam.

Contract No. 2 was for a saw mill and contract No. 3 for a logging engine. No. 4 was a contract let to A. J. Reeder for clearing the floor of the Hetch Hetchy Valley of all timber. The trees were cut down and sawn into cordwood.

*Hearing Before the Committee on Public Lands, p. 206.

Up to this time, however, everything had been hauled by wagon and automobile to the Hetch Hetchy Valley. But, in December, 1915, a contract to build the railroad from Rosasco, a station on the Sierra Railway of California, to Hetch Hetchy Valley, a distance of 67.73 miles, was let to F. Rolandi for $1,543,080.74.

Already, however, results were being demanded and City Engineer O'Shaughnessy, in submitting his report on March 25, 1916, took occasion to say in his letter of transmittal:

> "The Hetch Hetchy water supply is a most stupendous enterprise and in its magnitude and importance to the City of San Francisco, is second only to the rehabilitation of the City after the disaster of 1906.
>
> Enthusiastic amateur critics among the public at large are prone to demand tangible results at the very inception of any great public improvement and to indulge in unbalanced criticism, with a lack of knowledge of the facts, at the expense of the officials in charge when they find that much time must often elapse between the voting of bonds and the commencement of active work on a great project."*

Lack of money hindered the work. The market for municipal bonds had gone off and O'Shaughnessy said:

> "Owing to the difficulty of selling bonds to finance the contract for the railway, construction had not begun at the end of the year, although preliminary work was being carried on."†

All of this work it will be understood was preliminary. The road from the Hog Ranch made it possible to penetrate the country to the Hetch Hetchy Valley. From this point it was necessary to construct a road to Lake Eleanor, eleven miles away. Here a dam had to be built and water impounded for the generation of electricity to be used on the main project.

*O'Shaughnessy Report, March, 1916, p. 1.
†O'Shaughnessy Report, March, 1916, p. 28.

Cement, steel and other materials were hauled by auto trucks from Hetch Hetchy to Lake Eleanor.

During the construction of this dam a small power plant, costing approximately $250,000 was being erected at the bottom of the Tuolumne River canyon. The machinery had to be lowered a mile down into the canyon by means of a funicular railroad. The water was then led from Lake Eleanor to this power station, known as the Early Intake power station and the generation of electricity was begun.

With the completion of the Hetch Hetchy railroad and the electric power plant work was ready to proceed. In the carrying out of the project some 106 different contracts were let ranging from a few thousand dollars to several millions. The plans were all drawn in the city engineer's office and the work as it proceeded was then let out by contract to the lowest bidder.

The first large contract was for the building of the Hetch Hetchy dam which went to the Utah Construction Company for $6,114,648.86. W. H. Wattis and E. O. Wattis, President and Vice-President, respectively, gave much personal supervision to the work, while City Engineer O'Shaughnessy and his corps of assistants saw that the specifications were fulfilled.

One element of the contract deserves notice in passing. The city's 4½% bonds were not marketable. In making its bid the Utah Construction Company was given to understand that it would have to arrange for the purchase of sufficient of these unsalable bonds before the contract could be awarded. This the Utah Construction Company did. What it figured into its bid for this service was never disclosed. Naturally, it had to take into consideration the difference in the market value and the face value of these securities together with such charges as the bankers required for financing the deal.

A somewhat similar situation but of larger proportions developed a little later when the financing of the balance of the entire remaining portion of

the Mountain and Bay Divisions of the project came up for consideration.

With the Hetch Hetchy dam under course of construction the next move was to get the 18 miles of tunnels started. For a couple of years City Engineer O'Shaughnessy endeavored to do some of the tunnel work by day labor. He had little money. The Hetch Hetchy bonds were offered for sale without anyone to buy. Strikes were threatened and in order to proceed with the work it was decided finally to let out the contract for digging the tunnels, making the successful bidder take care of the financing of sufficient bonds to cover the cost of the work.

This contract was secured by the Construction Company of North America on its bid of $7,802,952.80 in 1920 shortly after the war and while the market for securities was at a very low point. It was provided that the work be completed in three years and that the Company take up the bonds in three annual installments. The first installment amounted to $3,052,000.

The following year and before the second installment of the bonds was taken up a Charter amendment was submitted to a vote of the people and overwhelmingly carried whereby the bonds could be sold to net 5½% interest instead of 4½%. Even at this rate the bonds were unsalable. They were offered over the counter without purchasers.

City Engineer O'Shaughnessy was desirous, now that the dam was under course of construction and the tunnels were being dug, to begin other important units of the project. Priest's reservoir and dam had to be built. Then there were the Moccasin Creek power house and the transmission lines. As the bonds were unsalable an appeal was made by representatives of the city administration to the Construction Company of North America to at least assist the city through its financial connections in the disposal of sufficient bonds to begin this work.

While O'Shaughnessy had only requested a sale of possibly $5,000,000 worth of bonds it was found in order to sell them at all a syndicate of banks

extending across the continent would have to be formed. In order to make it worth while the question came up as to how much money was needed to complete the entire Mountain Division. This was placed at approximately $12,000,000. A syndicate was organized of a dozen large banking institutions and on August 1, 1921, these banks, in the name of the Construction Company of North America, bid for and were awarded $13,006,000 worth of Hetch Hetchy bonds on a basis that would net the purchaser 5½% interest in accordance with the amendment to the Charter voted by the people.

At the same time, and in order to protect themselves against a change in the market whereby the balance of some $8,520,000 of Hetch Hetchy bonds might be sold to competitors on a more favorable basis, an option was given the syndicate as follows:

> "It is understood that in consideration of the foregoing purchase by the undersigned, you will, and by the acceptance of this offer, do give to the undersigned the right, to be exercised in its discretion, to purchase at a price which will net 5½% according to the standard table of bond values, all of the balance of the $8,520,000 of the $21,726,000 of water bonds."

This option expired on November 1st and was subsequently renewed and eventually the syndicate took up the remainder of the bonds. By this means the city secured the cash needed to proceed without further delay in the prosecution of its Hetch Hetchy project.

Owing to the fact that the interest rate had been increased by a vote of the people from 4½% to 5½% and many of the bonds being of long maturities, it resulted in the city's only obtaining approximately $19,000,000 for the bonds, which if they could have been sold on a 4½% basis would have brought $21,000,000.

Several years later when the market for municipal securities had returned to normal condition this fact was seized upon and charges made that it was

a bad piece of financiering. Supervisors McLeran, Rossi and McGregor of the finance committee, however, justified themselves by the statement that it seemed the only way in which money was to be obtained. The people had voted the increase and the bonds sold in accordance with the provision of the Charter amendment, and all of the supervisors present voted for it.

The syndicate of the banks on the other hand it is said only made the usual one-half per cent profit. The bonds were disposed of as rapidly as the market would absorb them. And the banks had assisted the city to obtain money when otherwise it would have been unable to do it.

To give an idea of some of the unexpected and unforeseen obstacles that arose, which were not considered in the plans, but which added greatly to the difficulties, a few illustrations will be interesting.

One of the first pieces of work in connection with the construction of the Hetch Hetchy dam was the diversion tunnel. The main Tuolumne River had to be carried through a tunnel in the granite mountain side to a point below where the main dam was to be built in order that the work of excavating for the foundation could proceed.

A temporary dam had to be built so as to deflect the river through this diversion tunnel. This would have the effect of leaving the main river channel dry. The temporary structure was built some distance up-stream from the main dam site.

Test borings had shown that a rock foundation for this temporary or coffer dam could be reached through the gravels with a comparatively shallow excavation. When the work was well under way it was discovered that the drills had gone into some immense buried boulders and the bed rock was far below them. The extra work and worry to overcome this unexpected development was a strain on both the Utah Construction Company and the city's forces. When the spring freshets came, the water rose within a few inches of the top of this dam built upon gravels.

At what was known as the Second Garrote shaft, in the 18-mile tunnel work, an underground flow of water was struck which necessitated a fight of nearly four years and constantly threatened to overwhelm the workers.

This shaft was to be sunk vertically to a depth of 786 feet, at which point tunnelling was to proceed in opposite directions to meet other sections being driven towards these points. The shaft was begun by the Construction Company of North America in November of 1918 and this part of the work was not completed until December, 1922.

The work on the Second Garrote shaft had not proceeded far before the water was encountered, seemingly from some inexhaustible supply. Electrically driven pumps had to be installed and the water was carried to the surface of the ground in pipes.

As the work proceeded larger pumps were installed. The water poured out of every seam and fissure. The men worked in oilskins. Night and day the fight continued. So many pipes had to be installed in the shaft that for a time it was feared that the entire opening would have to be given over to them; this would have blocked the operation of the skips or elevators.

The flow of water finally reached 2,000 gallons a minute. A steam driven air compressor had to be built and maintained for stand-by service to insure the lives of the workmen in case of the failure of the electric power supply. This battle was continued for four years. Little by little the shaft went down. At times no downward progress could be made. But, eventually, engineering ingenuity and perseverance were victorious. The shaft was sunk and the tunnel work started in two directions. The crews of men far underground finally met those from the other headings who had been working towards them.

A third illustration will suffice. A large submarine pipe line was to be constructed across San Francisco Bay at Dumbarton by Wm. Healy, under the firm name of Healy, Tibbitts & Company. Over the mud flats and

through the shallow water on both sides of the bay the pipe is carried on an iron trestle bridge. As it approaches the deep water on the Alameda side it has been slanted gradually until it disappears from sight and finds a resting place at the bottom of the bay. A trench was dug and the pipe actually buried twelve feet in the mud. This was necessary for two reasons.

First, in order that the pipes might not be hooked by the anchor of some boat and pulled apart.

Second, the joints had to be slightly flexible in order to allow it to be lowered into the bay. Under a 170-pound pressure this pipe would have squirmed about like a live thing unless it were given rigidity by the earth about it.

When this pipe reaches the San Mateo shore it rises vertically from the bottom of the bay about fifty feet in order to regain its position on the trestle bridge which carries it across the marsh. The right angle turn by this huge pipe at the bottom of the bay has necessitated the building of an enormous concrete and steel structure in order to withstand this lateral thrust. In describing its construction Frank Morton Todd wrote:

> "This structure is the caisson that receives the western end of the cast iron submarine pipe conveying Hetch Hetchy water across the bay, and that supports a section of it which rises to connect with the part carried on a steel bridge running to the western shore.
>
> The cast iron pipe is 42 inches in internal diameter and will, in operation, carry a flow of 45,000,000 gallons of water a day, and exert a horizontal thrust against the top of the caisson of 1,600,000 pounds.
>
> The caisson must resist that thrust under all conditions or San Francisco's water supply will be stopped, and it may take a year to get it going again. This work is infinitely more complex, more intricate, more technical and difficult than the building of the Pyramid of Cheops or all the eleven aqueducts that supplied imperial Rome.

The caisson was originally designed, on what was known from careful testing of the bottom of the bay at that point, to be about 73 feet in height. Resistance to the lateral thrust of pipe and water was designed in proportion. The bottom appeared to be a solid bed of clay. When the contractor tried to set his footings he broke through the clay stratum into a stratum of quicksand 12 feet deep.

The whole caisson had to be redesigned. The effect of the horizontal thrust increased enormously as the structure increased in vertical length, exactly as it is easier to tip over a tall shaft than a short one of the same diameter, and the caisson had to go 25 feet deeper. Battered, or slanting, piling had to be driven, and forms set, and reinforcing steel placed below the water, below the mud, below the clay, below the quicksand.

The contractor is paid on a unit basis, as the work is measured in yards of concrete, tons of reinforcing, and the like. But his troubles and costs increased in geometric ratio as he descended through the quicksand and sought firm footing under it, and the exactions of the city engineers were relentless.

The thing had to be safe—perhaps more than safe, but safe. Today it is a coffer of concrete 72 feet in diameter, with engaged vertical steel cantilevers, and meshed in all directions with reinforcing steel more intricately braided than the cane seat of a chair amid which 20 or 30 men must tread with care and pain 45 feet below the level of the bay, working with acetelyne torches to bend the bars after they are in position, because it is impossible to meet requirements if they are bent beforehand. It is slow, technical, difficult beyond all ordinary comprehension.

To put in such work securely calls for half a lifetime of executive experience and the technical attainments of schooled engineers checked by years of construction practice. It is being directed for the city by one of the greatest engineers in the United States. . . . "*

*S. F. Bulletin, November 21, 1925.

There was also the matter of securing the rights of way. San Francisco today owns in fee simple a strip of land 150 miles in length across the State of California. This strip varies from sixty to one hundred and ten feet in width. It goes through the heart of Redwood City and crosses some of the most valuable land in the San Joaquin Valley and the Modesto Irrigation District. It was bought by Jos. J. Phillips, the City's Right of Way Agent, at a cost far below what utility corporations have paid for similar lands. This right of way was necessary for the high power electric transmission line that the City constructed across the State.

Upon the completion of the Hetch Hetchy dam it was named by Mayor James Rolph, Jr. and the Board of Supervisors, the O'Shaughnessy Dam, in compliment to the man who had created it. This structure is a massive concrete affair. It reaches down 118 feet below the stream bed into the solid granite.

When the excavation of gravel and detritus finally laid the foundation bare it was found that in prehistoric times great pot holes had been worn in the solid rock by the action of the swirling waters. All these were cleaned out carefully, much the same as a dentist clears out portions of a tooth preliminary to filling it. These great holes served to give additional anchorage, if such were needed, to the structure itself. It made the dam a part of the very mountains.

The dam is also dovetailed into the sides of the canyon walls through excavations cut into the granite facings. In addition to this, and what tends to give it still greater stability is the fact that the canyon walls are narrower just below the dam, so that any pressure by the water from the upstream side would tend to force it more securely into the wedged-shaped canyon itself.

The dam as at present completed is not a finished structure. Its present height is 226.5 feet above the stream bed with 118 submerged or a total height from the foundation of 344.5 feet.

The foundation at its broadest part from the upstream face to downstream face is 298 feet. This has been built to sustain the final completed structure to its full height of 430 feet.

When it becomes necessary to add to the reservoir capacity, an additional thickness of 80 feet will be built on the downstream face of the dam. This additional masonry will cover the present stair-like or serrated front of the downstream face. It will be carried up to a height of 85 feet higher than the present dam. It will add 80 additional feet to the depth of the whole reservoir and make the depth of the water at the dam 300 feet.

On July 7, 1923, the completion of the O'Shaughnessy Dam was celebrated with appropriate exercises at the dam site. Several hundred citizens attended. On the occasion Mayor Rolph said:

> " . . . The people of San Francisco pay tribute of admiration and respect to M. M. O'Shaughnessy, City Engineer, as we dedicate O'Shaughnessy Dam—the master work of a great career, destined to stand throughout the centuries as one of the mightiest structures built by man. A great knowledge and wide experience, the genius to create, an inspired vision of the California of the future, and a courage undaunted by the sheer magnitude of the undertaking, have enabled Chief O'Shaughnessy to carry on this public enterprise, fraught with beneficence for the people of our own City and our broad coastal empire."*

The Mayor also read the following telegram on that occasion:

> "As a testimonial to the genius and self sacrifice of M. M. O'Shaughnessy, I offer the suggestion that a fund of $100,000 or more be gathered by popular subscription and presented to him as a testimonial of appreciation from a grateful people.
>
> (signed) Hartland Law."

With the completion of the main great structure the work was well on its way. The water, after it is released from the O'Shaughnessy dam, goes

*Municipal Record, July 19, 1923, p. 230.

down the natural stream bed for eleven miles to a point called Early Intake. At this point there is a small diversion dam which deflects the water into the opening of an eleven-foot tunnel.

The digging of eighteen miles of tunnels was the next step in the work. Lack of funds as has been shown held back the work. Labor troubles and Court actions placed other obstacles in the way of rapid realization. It was not until the early part of 1925 that this tunnel work was finally completed.

In the meantime, work had been begun on the big power station at Moccasin Creek. The water at this point, thirty miles from Hetch Hetchy dam, having flowed through eleven miles of open river channel and nineteen miles of tunnel, goes over a drop of 1316 feet.

Simultaneously with the work on the power house where 94,000 horse power of electric energy was to be generated work had been progressing on the high power transmission line leading from the power plant to Newark, in Alameda county. It was proposed to have the electricity distributed through the systems of the Pacific Gas and Electric Company or the Great Western Power Company, or both.

Fearful lest enemies at home or abroad might secure some undue advantage, the city's legal staff was kept constantly on edge. The decade of fighting through which the city had passed over the Hetch Hetchy project had developed a keen alertness.

Constant vigilance caused City Attorney Percy V. Long to have Frank English, one of his assistants, attend the sessions of the Legislature and scan every bill and see that none was passed with what is commonly termed in legislative parlance a "bug" in it. (Language hidden in a measure that would seriously affect future litigation over the rights that had been obtained or place the city at a disadvantage.)

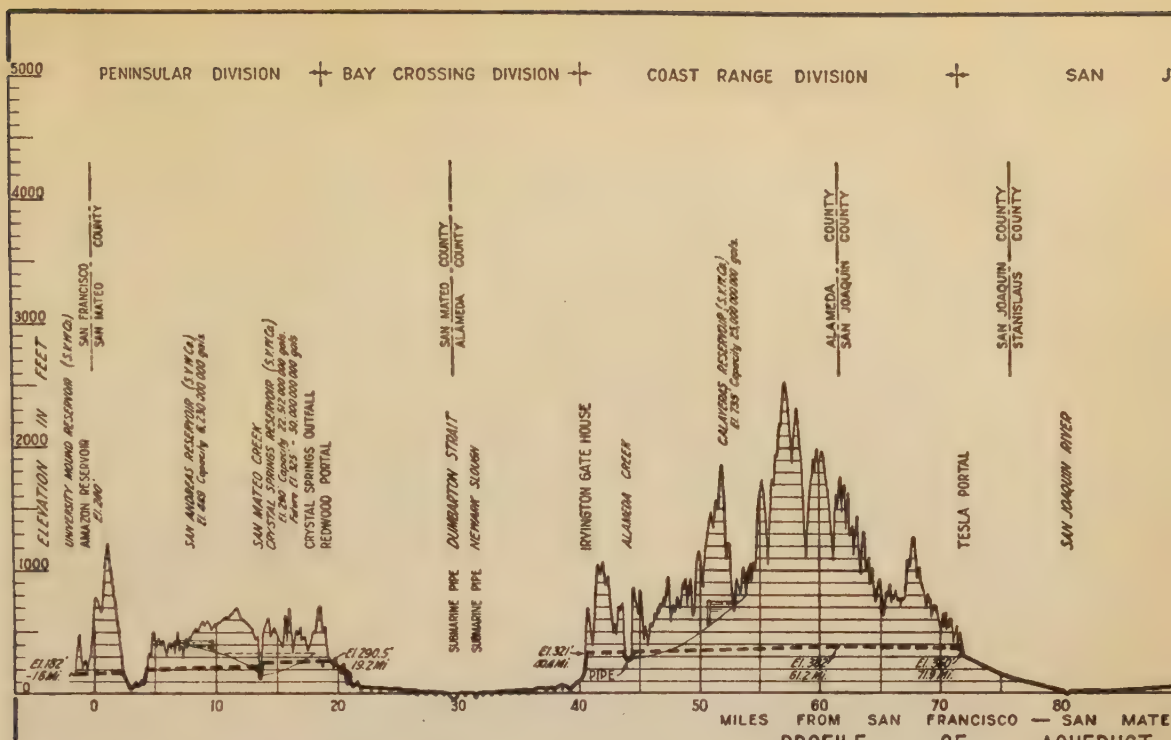
Finally in 1911, it was determined to anticipate and forestall as far as possible any attempt that might thereafter be made to jeopardize her rights

and at the same time to consolidate and confirm her holdings. To this end English prepared and secured the passage of the following amendment which protects all of the rights the city has secured by appropriations, purchase or otherwise:

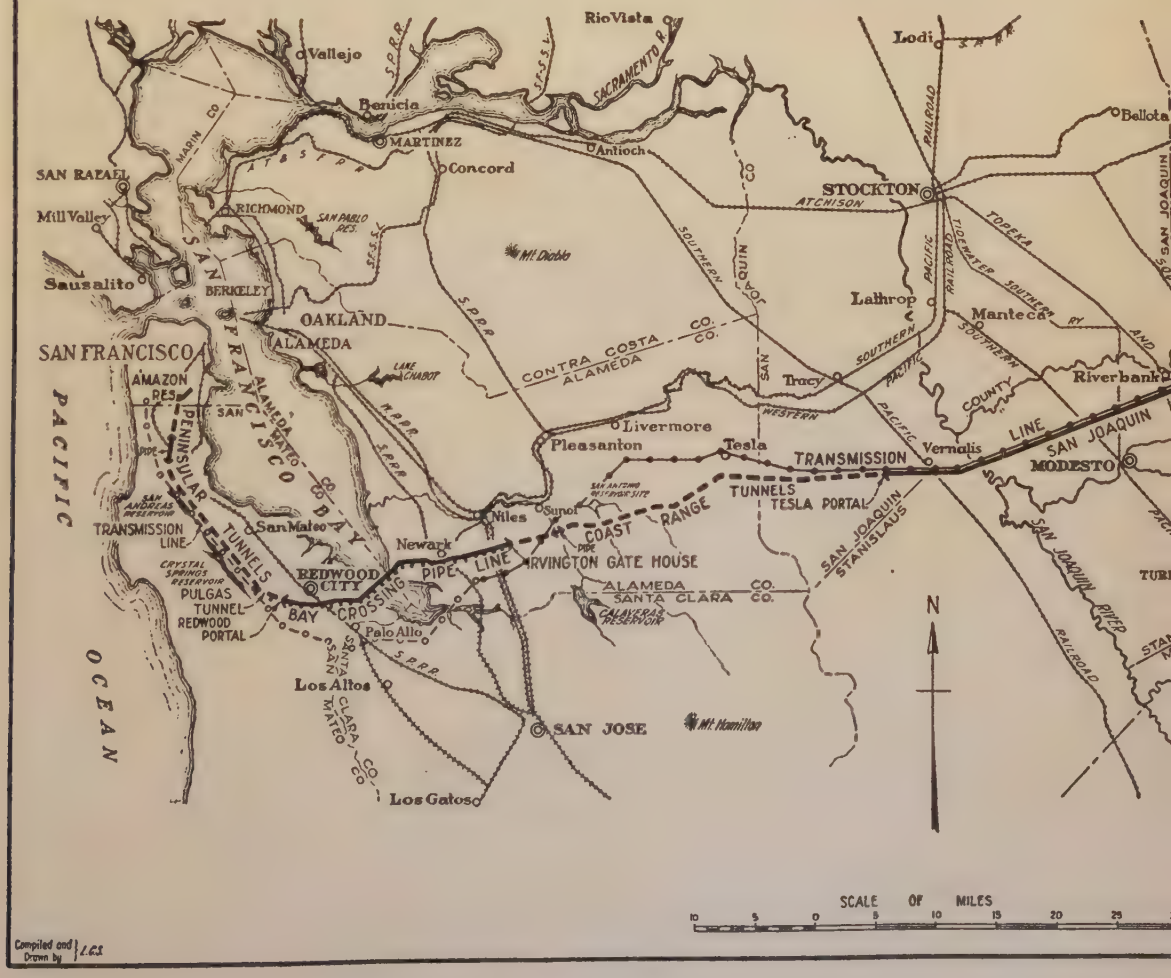
> "Provided, that whenever any city and county, or any incorporated city or town within this State makes, or has made, or acquires or has acquired any appropriation of any of the waters of this State in accordance with the provisions of Section 1415 of this code, it shall not be necessary for such city and county, city or town to commence the work for development of more of the water so claimed than is actually necessary for the immediate needs of such city and county, city or town, and it shall be held to be sufficient compliance with the requirements of this chapter to the full amount of water stated in the notice posted and recorded, for such city and county, city or town to within sixty days make the necessary surveys, or within six months to authorize the issuance of municipal bonds, for the construction of the necessary works designed to supply such city and county with the water required for immediate use. Any appropriation heretofore made by any such city and county, city or town in connection with which surveys were at any time made or an issue of bonds authorized for the continuation of any portion of the works necessary for a diversion of any part of the water appropriated, is hereby confirmed to the full amount of water stated in the original notice or notices."

Another important amendment of the code was secured in 1919 by special counsel R. M. Searls. Originally the irrigation districts had built their canals of small dimensions. Up to the time the city started on its Hetch Hetchy enterprise they had never diverted more than 2250 second feet of water. Subsequently they enlarged the canals.

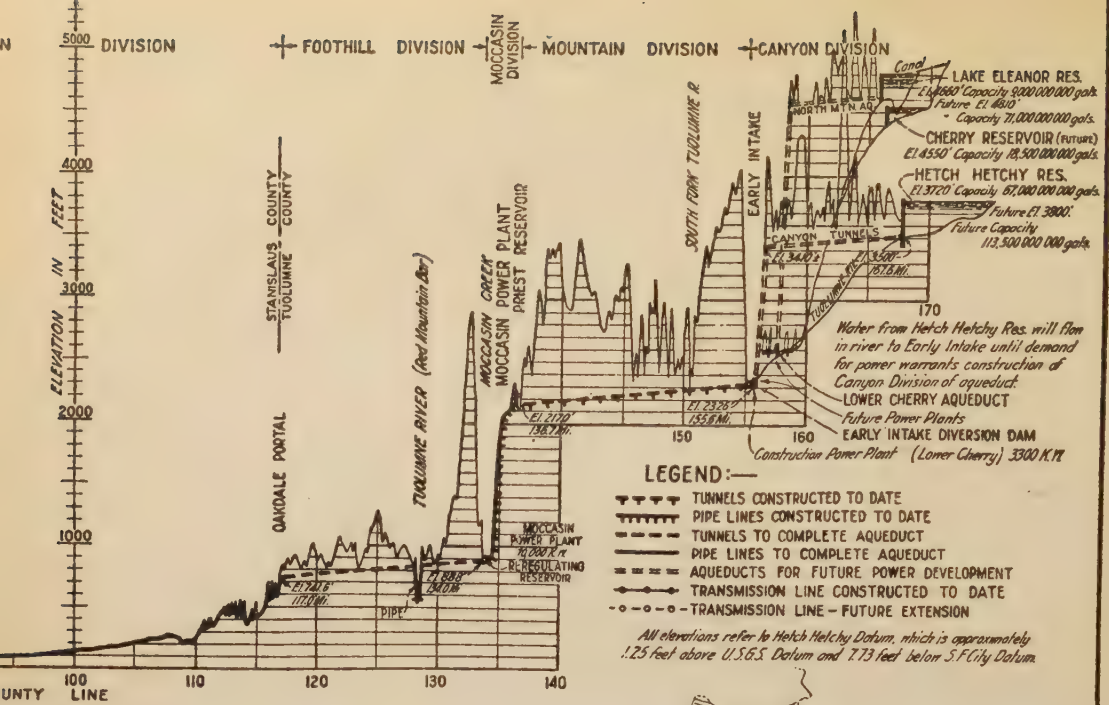
At that time their proposed development only anticipated the creation of some small foothill reservoirs. Later their plans were enlarged and the



PROFILE OF AQUEDUCT

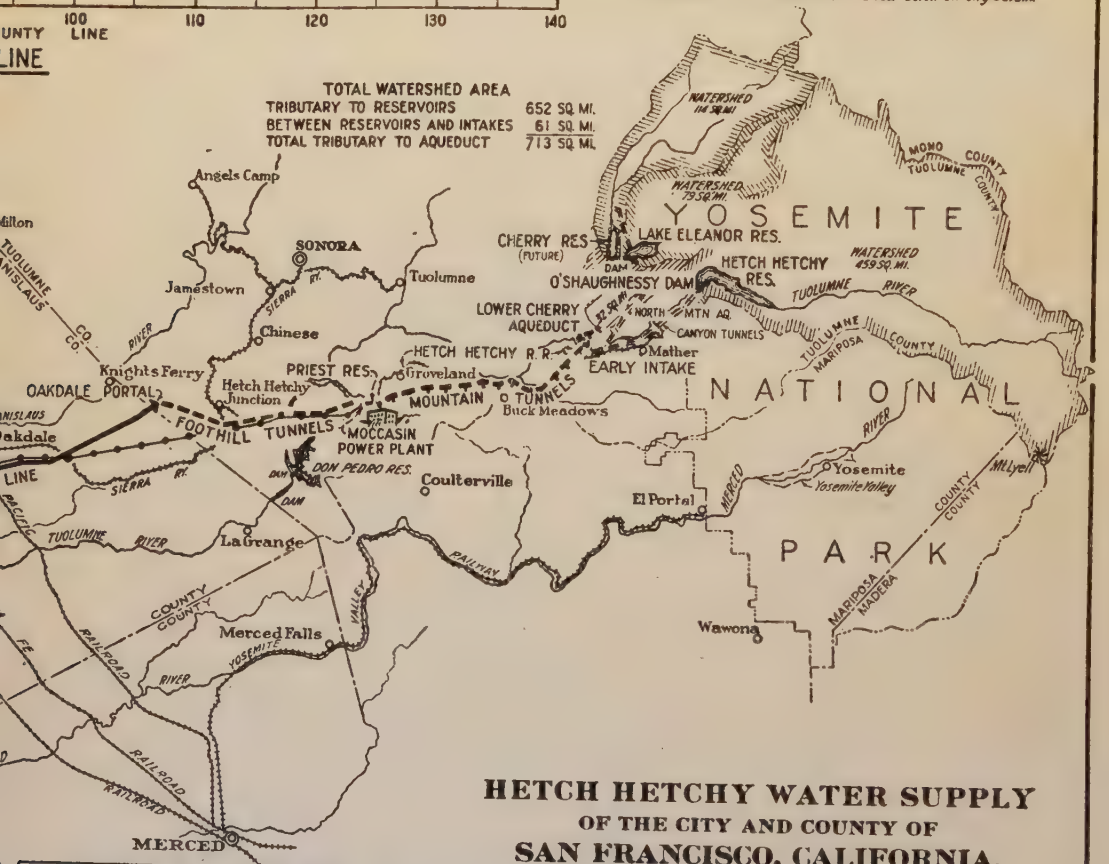


Compiled and Drawn by J.C.S.



TOTAL WATERSHED AREA

TRIBUTARY TO RESERVOIRS	652 SQ. MI.
BETWEEN RESERVOIRS AND INTAKES	61 SQ. MI.
TOTAL TRIBUTARY TO AQUEDUCT	713 SQ. MI.



LENGTHS OF AQUEDUCT (IN MILES) EARLY INTAKE TO AMAZON RESERVOIR				
DIVISION	TUNNEL	PIPE	RESERVOIR	TOTAL
MOUNTAIN	18.8	0.03	0.6	18.8
MOCCASIN	1.1	0.9		2.6
FOOTHILL	16.5	0.5		17.0
SAN JOAQUIN		45.2		45.2
COAST RANGE	30.8	0.6		31.4
BAY CROSSING		21.2		21.2
PENINSULAR	17.7	1.9		19.6
TOTAL	84.9	70.3	0.6	155.8

HETCH HETCHY WATER SUPPLY

OF THE CITY AND COUNTY OF SAN FRANCISCO, CALIFORNIA.

GENERAL MAP AND PROFILE

DEPARTMENT OF PUBLIC WORKS

APPROVED [signature] CITY ENGINEER.

JANUARY 1925

B-379

Don Pedro reservoir was begun. By the building of the Don Pedro dam lower down on the Tuolumne River it was planned to create an enormous lake.

Then in 1919, it was proposed to operate a power plant in connection with this reservoir. As the irrigationists had no authority to generate electricity they went to the legislature seeking an amendment which would give them this right.

Searls immediately saw the possibility that the city might be compelled to release water from the Hetch Hetchy reservoir, in order to operate the irrigation district electric plant. He at once prepared a clause to be inserted in the proposed bill, and hurried to Sacramento. His suggested amendment was adopted by the Legislature. This clause restricted the use of water for the generation of electricity by the irrigation districts to such water only, as they had a right to use beneficially for irrigation purposes. The language of the law being as follows:

> "Provided, however, that any use of water for generating such electrical power or energy at any given time of the year which is in excess of the water appropriated and beneficially used for irrigation purposes by such district at such period of the year, shall be subject to all prior existing appropriations by any municipal corporation, who or which is proceeding in good faith in the expenditure of money and the construction of works to divert the water appropriated."

By June, 1925, this entire Mountain Division as it is known, was completed and ready to generate power sufficient to pay interest on more than the entire investment that the city had in this end of the undertaking, approximating $37,000,000.

In preparing for this work City Engineer O'Shaughnessy called into consultation Frank G. Baum, Electrical Engineer, Dr. W. F. Durand, Mechanical Engineer, and John D. Galloway, Civil Engineer, whose advice he relied

upon regarding many of the involved questions that arose in connection with the various parts of the project.

In reference to principal engineering features and the organization, O'Shaughnessy says in his report:

> For convenience the work has been divided into ten divisions, known as the Lake Eleanor, Hetch Hetchy, Mountain, Priest, Moccasin, Foothill, San Joaquin, Coast Range, Bay Crossing and Peninsula Divisions.
>
> Surveys, geological and engineering studies have so far been conducted over the entire work and construction done on all divisions except the San Joaquin and Coast Range.

COST OF VARIOUS DIVISIONS OF THE WORK

Financed from Bond Issue of 1909 and 1910,
and General Fund Expenditures Previous to 1909

MOUNTAIN DEVELOPMENT

Hetch Hetchy Division		
O'Shaughnessy Dam, clearing of Hetch Hetchy Reservoir		$ 7,400,000
Eleanor Division		
Eleanor Dam, clearing of Lake Eleanor Reservoir		373,000
Mountain Division		
Early Intake Diversion Dam and spillway and headworks of aqueduct	$ 610,000	
Aqueduct tunnels and appurtenances, Early Intake to Priest Reservoir (18.84 miles)	10,100,000	
Total		$10,710,000
Moccasin Division		
Priest Dam and Reservoir	$ 930,000	
Moccasin Tunnel, from Priest Reservoir to head of penstock lines	1,200,000	
Penstock lines	2,000,000	
Power House Building, dwelling, school, etc.	1,200,000	
Power House Machinery	1,135,000	
Transmission Line, Moccasin to Newark	1,623,000	
Total		$ 8,088,000

Foothill Division

Red Mountain Bar Siphon		$ 262,000

General Utilities, etc., on Mountain Development

Sawmill Construction and Operation	$ 556,000	
Lower Cherry Power System, construction and operation	1,079,000	
Hetch Hetchy Railroad, construction and operation	5,379,000	
Munn Sand Plant, Groveland Water Supply, etc.	77,000	
Hospital construction and operation	221,000	
Miscellaneous Structures, Water Supply at Groveland,	196,000	
Miscellaneous Roads, Trails, Camps, etc.	369,000	
Boarding House loss	360,000	
Field Engineering and Administration	381,000	
Total		$ 8,618,000
Total, Mountain Development		$35,451,000

BAY DEVELOPMENT

Riveted Steel Pipe Line, 60 inches diameter	$ 2,408,000	
Trestle for Steel Pipe Line	198,000	
Submarine Pipe Lines	599,000	
Steel Bridge and Piers	1,560,000	
Gate Valves, Bay Pulgas Pumps, etc.	39,000	
Pulgas Tunnel	757,000	
Field Engineering and Administration	93,000	
City Office Engineering and Administration	42,000	
Total		$ 5,696,000

GENERAL

Administration, Engineering, Legal, etc.	1,415,000	
Reservoir and Watershed Lands, Water Rights, Rights of Way, Payments to U. S. Government, etc.	2,020,000	
Lands and Rights of Way, San Joaquin Division	215,000	
Lands and Rights of Way, Transmission Line	117,000	
Lands and Rights of Way, Bay Development	221,000	
Miscellaneous	322,000	
Total		4,310,000

Total Expenditures	$45,457,000
Less credit for receipts from operation of Hetch Hetchy Railroad, Lower Cherry Power System, lumber sales, etc.	1,907,000
Net total expenditures after deducting credits, which may be still further reduced on final accounting by salvage value of equipment now on hand	$43,550,000*

ORGANIZATION

The Hetch Hetchy development is one of the activities of the Department of Public Works of the City and County of San Francisco. The City Engineer is Chief Engineer of the project. The Chief Assistant Engineer has direct charge of the work. Two construction engineers, located at Groveland and at Palo Alto, report to the Chief Assistant Engineer. Legal matters are handled by special counsel and rights of way by a right of way agent.

The staff consists of:

General

M. M. O'Shaughnessy, City Engineer	Chief Engineer
N. A. Eckart	Chief Assistant Engineer

City Office Engineers

L. W. Stocker	Assistant Engineer
R. P. McIntosh	Hydraulic Engineer
R. J. Wood	Structural Engineer
P. J. Ost	Electrical Engineer
E. P. Jones	Mechanical Engineer

Construction Engineers

L. T. McAfee	Construction Engineer, Groveland
C. R. Rankin	Construction Engineer, Palo Alto
L. A. McAtee	Assistant Engineer, Groveland
J. H. Ryan	Assistant Engineer, Groveland
A. J. Wehner	Assistant Engineer, Groveland
L. B. Cheminant	Assistant Engineer, Groveland
A. B. Johns	Assistant Electrical Engineer, Groveland

General Office Staff

Robert M. Searls	Special Counsel
Jos. J. Phillips	Right of Way Agent
H. W. Kephart	Purchasing Agent

*Hetch Hetchy Water Supply, by M. M. O'Shaughnessy, 1925, pp. 39-40.

The following are among the experts who have acted as consultants at different times on the project:

Frank G. Baum	Electrical Engineer
Dr. Wm. F. Durand	Mechanical Engineer
Dr. Jas. C. Branner	Geologist
John D. Galloway	Civil Engineer
Professor Chas. D. Marx	Civil Engineer
Professor Charles Wing	Civil Engineer

POWER DISPOSAL

CLOSELY FOLLOWING THE SUBMISsion of the Water and Power Act, as it is known, to a vote of the people of the state in November, 1922, again in 1924, sudden demands began to be made, by a portion of the press of the city favoring municipal ownership, that San Francisco should do its own distributing of Hetch Hetchy power. As the completion of the Mountain division approached these demands became more and more insistent.

The Board of Supervisors was attacked. City Engineer O'Shaughnessy was charged with having unnecessarily spent large sums of money in extravagant construction in order to deplete the last of the original $45,000,000 bond issue, thus making it impossible to advance the transmission lines closer to San Francisco than Newark, Alameda County. This was done, these papers claimed, in the interest of the privately owned power companies.

Numerous resolutions were passed by the supervisors. Under the urging of these papers they placed themselves on record as favoring municipal distribution of Hetch Hetchy's electric output as soon as bonds could be voted. They proposed the purchase of the existing plants of one or both of the local power companies or the building of an entire independent distributing system.

With this object in view the Board of Supervisors requested the State

Railroad Commission to evaluate the distributing systems of the Pacific Gas and Electric Company and Great Western Power Company. The supervisors also pledged themselves to call a bond election and submit the question of purchasing or building a distributing system to a vote of the people.

The claim was further made that under the Raker Act the city could not sell its power. It had to distribute the electric energy or place itself in the position of having its rights forfeited. This assertion was repeated with variations and insistence by those favoring municipal distribution.

In a discussion of this subject before the Commonwealth Club of California, Robert M. Searls, Special Counsel for the Hetch Hetchy Project said:

> "The Raker Act emerged from Congress loaded with a hodge-podge of conditions which had been inserted by every department clerk and every member of the House of Representatives who had some theory of natural conservation, protection of irrigation interests, or public ownership, to exploit.
>
> I do not think that the city authorities who represented San Francisco in Washington are to be criticised for letting these conditions get into the bill. They couldn't help themselves. They had to take the best they could get. Nevertheless, those of us who are charged with the working out in a practical way the provisions of that Act have some task before us. The section which is causing the most controversy in public print at present is Section 6, which reads as follows:
>
> 'That the grantee is prohibited from ever selling or letting to any corporation or individual, except a municipality or municipal water district or irrigation district, the right to sell or sublet the water or electric energy sold or given to it or him by said grantee; Provided that the rights hereby granted shall not be sold, assigned, or transferred to any private person, corporation, or association, and in case of any attempt to so sell, assign, transfer or convey, this grant shall revert to the Government of the United States.'

> This section was originally drafted to prevent San Francisco from turning the project over to the Spring Valley Water Company. Some Congressmen from Arkansas were afraid that it might be turned over to a power company, and inserted the words—'or electric energy.' That didn't suit some of the others, so they added a forfeiture clause, which you will note pertains only to attempts to sell the rights granted under this Act."*

So far as the engineering plans disclose they contained nothing to warrant the belief that the city had intended to go into the retailing of electric energy. The Grunsky plans had merely a suggestion of electric development. The Manson plans went somewhat further, both providing for the development of sufficient power for pumping purposes—while the final Manson plans show a transmission line into the city.

The real hydro-electric development was grafted on to the Hetch Hetchy project in the Freeman plans. And yet Freeman says:

> "The city at present does not propose to undertake any power development, but the time may come when these power rights may be a profitable *source of revenue.* [Italics are author's.] In view of the burden that the city must undertake in building the proposed dam and aqueducts, it is manifestly unjust to deprive it of any proper source of lightening this burden."

And again:

> "The city does not propose in the immediate future to build any plant for the development of hydro-electric power, but it plans to carefully conserve all reasonable opportunities for power development against the time when it may become expedient for the city to undertake such matters. The aqueduct will be built with surge shafts, inclined tunnels and appurtenances suitable for the attachment of turbine penstocks, etc."†

City Engineer O'Shaughnessy modified the Freeman plans regarding the

*Transactions, Commonwealth Club, Vol. 17, No. 3, p. 123.
†John R. Freeman Report, p. 149.

immediate development of the power. And as early as 1916 he proposed the sale of power, to reduce the heavy financial burden. He said:

> "The water will be dropped 1300 feet through an electric generating station at Moccasin Creek, where an average of 66,000 horsepower will be available. . . . giving the city a *marketable asset* [italics are author's] at an early stage of development."*

In a subsequent report in 1920 he says:

> "Sound economic reasoning dictates that the Mountain or power generating division of the project be completed first, in order that the burden upon San Francisco's taxpayers of paying interest during construction may be reduced through receipts from *power sales* [italics are author's] at the earliest possible moment."†

For years, therefore, there never had been any thought of the city building a distributing system of its own. On the contrary, it was proposed to sell the output of the Moccasin Creek plant. Furthermore, it was not believed that the city could lawfully use the proceeds of the 1910 bond issue, voted strictly for a water works, for power disposal purposes.

In addition to this the city began selling its excess power from its small Early Intake power plant to the Pacific Gas and Electric Company during the war under orders of H. G. Butler, the Federal Power Administrator, and up to the year 1925 had sold approximately $300,000 worth.

While it cannot be said that any of these considerations could in any way modify the Raker Act, the ambiguity of the language of the Act itself, taken in connection with what it was believed was the economic thing to do, reinforced by the fact that the city had been disposing of power for a long period of years, led to a widespread confusion regarding the matter. It is an explanation if not an answer to the question that has been asked many times why no provision was made to distribute Hetch Hetchy power prior to the completion of that part of the project.

*O'Shaughnessy Report, Mar. 1916, p. 10.
†O'Shaughnessy Report, Jan. 1916, p. 4.

Record Shows Raker's Memory Is Bad on Forfeiture Clause

JOHN E. RAKER, who introduced in Congress the act permitting San Francisco to launch the Hetch Hetchy project, unfortunately has been led into comments likely to still further confuse the situation that is costing the city a great deal of money wasted.

Twelve years have passed since the events Mr. Raker is talking about and evidently his memory is playing tricks on him. Fortunately the facts are preserved in black and white in the Congressional Record, so it is easy to refresh Mr. Raker's memory.

The record shows that the forfeiture provision applies only to sale of the original grant itself and NOT to the sale of water or power developed under the grant.

On Tuesday, September 2, 1913, the House of Representatives resolved itself into a Committee of the Whole for consideration of the Raker bill.

Representative Murray of Oklahoma moved to add the following matter:

"And upon the violation of the grantee of any of said conditions, all the title, easements and franchises, together with all appurtenances thereunto belonging granted by this act, shall revert to the United States."

Representative Mann objected:

"To say that San Francisco, after it has expended $75,000,000 or $100,000,000, forfeits its entire right seems to me to be going the limit. If it is the intention of Congress to reserve complete control over this and not give an absolute, fixed right upon which the city may borrow money, the best way to do it, it seems to me, would be to insert the ordinary provision that Congress reserves the right to alter, amend or repeal. Then if they violated the provisions of the act so that there is substantial violation, it is within the control of Congress."

Representative William Kent added:

"Mr. Chairman, it seems to me that this amendment, which means well, is altogether severe. I think that all public rights are properly safeguarded in the bill as it now stands."

After considerable discussion Mr. Murray's amendment, **which provided for a forfeiture was rejected by an overwhelming vote.**

Representative Raker then offered an amendment which was adopted and became subdivision U of section 9 of the act. This provided that the Attorney-General could bring suit to compel San Francisco to comply with the conditions of the grant.

This led to the following illuminating comment by Representative Steenerson of Minnesota:

"Mr. Chairman, if this amendment were not inserted and there were a breach in the conditions of the grant by force of the common law procedure and practice the Attorney General could bring a suit for forfeiture for violations of those conditions. **But this amendment limits the right of the Attorney-General to bring a suit, not of forfeiture * * but a suit to enforce the provisions of the grant."**

That there was no forfeiture clause included in the bill as a penalty for sale of water or power was also clearly understood in the Senate, for Senator Poindexter of Washington, who opposed the grant, said:

"There is a specious provision in the bill that the city of San Francisco shall not grant to any private person the right to sublet or to sell the power or the water which it may acquire the right to develop or to use under this bill but that is left entirely to the good faith of the city.

"There is no forfeiture clause," Senator Poindexter continued; **"there is no practical way in which the Federal Government could ever enforce that provision."**

The only penalties in the Raker act apply if any attempt should be made to sell the rights granted in the bill. The clause making this distinction clear was proposed by Congressman Raker himself.

There has been no suggestion that the city take advantage of the absence of penalty and act in bad faith. On the contrary, the city is bound in good faith not to waste any of the valuable products of the Hetch Hetchy project. It can make the temporary sale of power as proposed and save the $2,000,000 a year now being wasted. It can do this in good faith and without violating the spirit of the act of Congress.

PLATE XIX.

The San Francisco Chronicle states the case of the city in the above editorial, June 3, 1925, in reply to arguments that the municipality lays itself liable to a forfeiture of its Hetch Hetchy grant by temporarily disposing of electric energy from its Moccasin Creek plant.

In this same connection Mayor Rolph in a printed statement issued to the voters advocating the purchase of the Spring Valley properties, dated December 4, 1920, said:

> "The city has gone ahead in good faith with the construction of the Mountain Division of the Hetch Hetchy project. It is expected it will be completed within three years. It will yield upwards of 66,000 electric horsepower, *sufficient to pay interest and take care of all fixed operating and maintenance charges on that part of the project.*" [Italics are author's.]

In 1923 a letter was written to the Secretary of the Interior by the National Park Service asking for an opinion as to whether the city could sell the output of its Early Intake plant under the Raker Act.

This was the first time that the point had been raised. It led to a closer scrutiny of the language in an effort to come to a conclusion as to what it really meant. As the result of that inquiry John H. Edwards, Solicitor for the Department at Washington, made an exhaustive study of the subject. He held that, while the city could not in his judgment sell the power outright, he made the suggestion which he believed would obviate the necessity of the city's building a distributing system of its own and going into the retailing of its electricity.

On page 10 of his letter of June 8, 1923, he says:

> "I have indicated that in my opinion the law prohibits the sale of electric energy by the grantee for resale. The method of enforcing the Act is plainly stated in the proviso to section 9. I may add, however, that I would not recommend resort to that extremity at this time, but would make known to the grantee the views of this Department in the matter with a suggestion that an *arrangement be made for the distribution of the surplus electric energy by a method which would not conflict with the law.* . . .
>
> Instead of selling this power for resale and distribution, as has been done and further proposed, it occurs to me that *it would*

> *be feasible for the parties to agree upon terms by which the grantee would have its power transmitted over the lines of the concern owning or controlling the existing distribution system. This method would avoid conflict with the provisions of the law* and apparently accommodate the grantee to the existing conditions of the project."

This is precisely what finally was done.

As the completion of the Mountain Division approached—scheduled for June 1, 1925—at which time the electric energy would become available, efforts were begun by municipal officials to consider what disposition should be made of it.

City Engineer M. M. O'Shaughnessy, nearly two years previously, had been authorized by the Board of Supervisors to make a report of what the city could expect to obtain for the electrical output. He first held conferences with John A. Britton of the Pacific Gas and Electric Company. Later he secured from President Wigginton E. Creed an offer of $2,000,000 annually.

O'Shaughnessy at that time based his demand for this amount on two grounds:

1. He wanted a sum sufficient to pay interest on the entire investment in the Mountain Division, or, roughly, $40,000,000, which at 5% would amount to $2,000,000 a year. (The Mountain Division did not cost that amount.)

2. He asked half a cent a kilowatt for the 400,000,000 kilowatts which it was estimated would be the output of the plant. This would amount to $2,000,000.

Mayor Rolph, in order to get an unbiased outside judgment on the subject, appointed an advisory committee of five consisting of James D. Phelan, Chairman; Judge Matt I. Sullivan, Chas. H. Kendrick, Henry Boyen and Judge F. J. Murasky. The committee was originally appointed to recommend what steps should be taken by the city to market the power from the Moccasin Creek power house. The committee recommended:

First. A valuation be made by the State Railroad Commission of the distributing systems of the two local companies in anticipation of their condemnation through court action or purchase by agreement by the city.

Second. Direct authorization from the people in the form of a bond issue to build or purchase such a system or systems.

While these proceedings were under way the power plant had been completed. The Mayor and a majority of the Board of Supervisors were loth to allow a waste of the power to take place while efforts were being made to secure a distributing system through condemnation. They decided upon the disposition of the electric output of the Hetch Hetchy system upon substantially the terms secured by O'Shaughnessy.

A contract was entered into with the Pacific Gas and Electric Company in which provisions were inserted for the termination of the arrangement upon one day's notice and other clauses to bring it within the Raker Act. This agreement was finally passed by the Supervisors and approved by Mayor Rolph on June 29, 1925.

Immediately a sort of guerrilla warfare was started against the arrangement by a minority of the Board of Supervisors consisting of Supervisors Shannon, Welch, Deasy, Katz, McSheehy, Roncovieri and Badaracco. The irrigation districts were roused to action. A protest was made by the minority group to the Secretary of the Interior at Washington that the disposal of power was illegal. This was followed by the irrigation districts.

The majority of the supervisors consisting of McLaren, McGregor, Hayden, Morgan, Colman, Harrelson, Robb, Wetmore, Bath and Schmitz stood firm although fiercely attacked by certain papers.

Mayor Rolph, accompanied by Supervisor Ralph McLaren, Assistant City Attorney John J. Dailey, Special Counsel Robert M. Searls and Assistant City Engineer Nelson Eckart hurried to Washington to obtain a ruling from the Secretary of the Interior on the question. Once more the old

scene of the city's representatives knocking at the door of the Secretary of the Interior was reenacted.

Without waiting for the ruling, however, the delivery of power to the Pacific Gas and Electric Company was begun according to the terms of the contract that had been entered into, on August 12, 1925.

Both the Secretary of the Interior and the Attorney General refused to make a ruling, leaving it to the city to proceed with the contract. They took the position that they were not called upon to make a ruling until such time as they believed the Raker Act was being violated.

WHAT NOW OF SPRING VALLEY?

HOW are the Hetch Hetchy and Spring Valley systems to be reconciled? Originally the Hetch Hetchy was proposed as an independent water system designed to put the Spring Valley Company out of business. It has been seen that with a live, resourceful and active enemy in the field this was impossible. The Raker Act fixed it so for all time.

Every effort made by the city for half a century to secure a water system of its own was blocked. Its earlier efforts were frustrated in the Legislature. The letter of C. N. Felton shows that the proposed purchase of the Calaveras Valley in 1875 by the city as an independent water supply was circumvented by an overnight bargain hurriedly made by the Spring Valley Water Company.

What with changing administrations, the necessarily slow and awkward working governmental machinery, the city could not compete with its agile competitor. Its troubles before the Secretaries of the Interior, whether rightly or wrongly, were attributed in the popular imagination to Spring Valley officials. The irrigationists, the nature lovers, the mountain climbing clubs and hordes of other individuals who fought the city's attempts to acquire the rights in the Hetch Hetchy it was charged were incited either directly or indirectly by the company's officers.

Stung and harried by a thousand enemies the city's representatives at

Washington finally capitulated. They agreed to the clause in the Raker Act which reads:

> "That said grantee (City of San Francisco) shall not divert beyond the limits of the San Joaquin Valley any more of the waters from the Tuolumne watershed than, together with the waters which it now has or may hereafter acquire shall be necessary for its beneficial use for domestic and other municipal purposes."

Spring Valley had been fighting for its very life. As was stated in the report of Dr. C. A. Clinton, James E. Britt and Dr. Washington Dodge, in 1896: "The policy of this company in preventing opposition by acquiring water sites and sources shows active business enterprise."

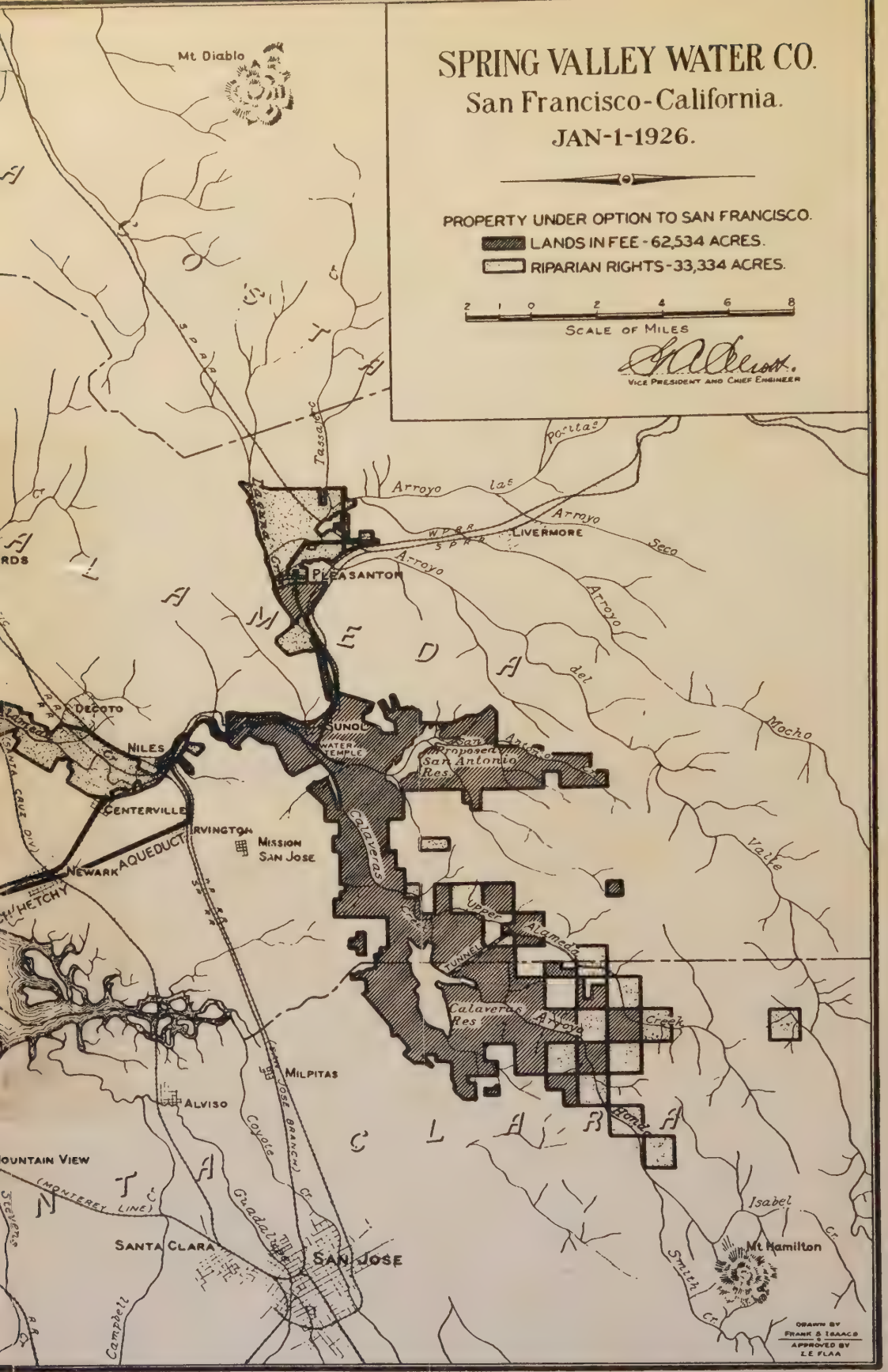
On the other hand the company had acquired all of the natural nearby sources. The development of the system under Hermann Schussler had been carried out with a view of maintaining and protecting the purity of the water and of insuring the life of its works by the best materials and workmanship.

The water company had purchased over a hundred thousand acres of land in the three nearby counties. Schussler went east and supervised the manufacture of the pipes at an additional cost. He said, in order that there would be little or no depreciation.

For this he got no credit by the city's representatives when it came to the fixing of rates. The charge was made that the price of the pipe was excessive and the supervisors were not willing to allow rates to cover what it was claimed was an extravagant waste of money. He received cold comfort from his board of directors as a result.

San Francisco never has had an outbreak of any epidemic that could be attributed to its water. For seventy-five years it has grown and prospered on the water furnished it. The fixing of the rates each year, however, led to endless troubles. But the asperities of these troublous days are gradually disappearing.

MILL VALLEY
SAUSALITO
GOLDEN GATE
SAN FRANCISCO
Lobos Cr.
LAKE MERCED
COLLEGE HILL
UNIVERSITY MOUND RES.
COLMA
SOUTH SAN FRANCISCO
BADEN
SAN BRUNO
AQUA
MILLBRAE
BURLINGAME
SAN MATEO
San Andreas Res.
Pilarcitos Res.
Crystal Springs Res.
San Mateo Cr.
BELMONT
SAN CARLOS
REDWOOD
DIVISION
BAY
Pilarcitos
HALF MOON BAY
UNIVERSITY OF CALIFORNIA
BERKELEY
OAKLAND
ALAMEDA
FRUITVALE
ELMHURST
SOUTHERN PACIFIC
San Leandro
Lake
WESTERN PACIFIC
ALVARADO
PACIFIC OCEAN
SAN FRANCISCO BAY
WOODSIDE
PORTOLA WOODS
PALO ALTO
STANFORD UNIVERSITY
MAYFIELD
San Francisquito Cr.
SANTA CLARA
San Gregorio Cr.
N


SPRING VALLEY WATER CO.
San Francisco - California.
JAN-1-1926.
PROPERTY UNDER OPTION TO SAN FRANCISCO.
LANDS IN FEE - 62,534 ACRES.
RIPARIAN RIGHTS - 33,334 ACRES.
2 1 0 2 4 6 8
SCALE OF MILES
VICE PRESIDENT AND CHIEF ENGINEER
Mt Diablo
ALAMEDA
SANTA CLARA
Arroyo las positas
Arroyo Seco
Arroyo del Valle
Arroyo Mocho
Tassajara Cr
Tesla Cr
LIVERMORE
PLEASANTON
DECOTO
NILES
SUNOL
WATER TEMPLE
San Antonio Res
Proposed San Antonio Res
CENTERVILLE
IRVINGTON
MISSION SAN JOSE
NEWARK
AQUEDUCT
HETCHY
Calaveras Cr
Upper Alameda TUNNEL
Calaveras Res
Arroyo Hondo
Creek
MILPITAS
ALVISO
Coyote Cr
San Jose Branch
Guadalupe R
MOUNTAIN VIEW
(MONTEREY LINE)
SANTA CLARA
SAN JOSE
Campbell
Stevens
Isabel Cr
Mt Hamilton
Smith Cr
DRAWN BY FRANK B. ISAACS
APPROVED BY L.E. FLAA

Quite recently the Spring Valley Water Company, under S. P. Eastman as its president, came to the assistance of the Hetch Hetchy project. It paid $1,000,000 into the City Treasury for four years advance rental of the Hetch Hetchy submarine pipe line, to tide over a temporary shortage in Hetch Hetchy funds.

It has been recognized that ultimately the city must purchase the Spring Valley system. Its reservoirs in San Mateo County and elsewhere cannot be duplicated. To parallel its distributing system throughout the city would be great economic waste. No Hetch Hetchy water can be distributed by the municipality unless the system is purchased.

As has been already pointed out, its purchase was advocated at the time of the bond issue in 1910. In his report John R. Freeman says:

> "In planning to meet the demands of the distant future, the amount that can be obtained from the sources now in use must be included, also whatever amount is available from the sources owned by the Spring Valley Water Company . . . not yet put into use."*

Secretary of the Interior Walter I. Fisher, on page 10 of his printed letter of 1913, on this subject says:

> "It is conceded that it would be unsound economics for the City of San Francisco to duplicate the existing distributing system and that it should acquire most if not all of the present sources of supply of the Spring Valley Water Company; and the Advisory Board bases its report on this theory.
>
> It is the declared intention of the city to purchase these properties as the beginning of its proposed municipal water system and active negotiations have been carried on to that end. These negotiations, however, have thus far proved unsuccessful.
>
> I do not wish any action of mine to be open to the construction of expressing any opinion whatever as to the merits of the

*Freeman Report, p. 81.

> controversy between the city and the company as to the value of the latter's property, nor as to which portions of the property it would be appropriate for the city to acquire. If they are unable to agree, both parties should be compelled to submit to some impartial tribunal."

Following this Congress placed the clause in the Raker Act which provided that no water should be diverted from the Tuolumne until the nearby sources had all been put to beneficial use. The debates before the Committee disclosed that no approval would be given to any measure in the interest of conservation that allowed the nearby sources to go to waste.

It was with these expressions in mind that Mayor Rolph early in his administration endeavored to accomplish the purchase of the Spring Valley properties. His first attempt in 1912-1913 was unsuccessful. Disagreements between the representatives of the city and the company over the price and later among the supervisors themselves finally resulted in the failure to submit the matter to a vote of the people at that time.

As time went on it became more and more apparent that ultimately the Hetch Hetchy and the Spring Valley must be merged into one system. The reservoirs of the Spring Valley in San Mateo County can store several years' supply of water. The Crystal Springs dam, over which the Skyline boulevard is built, can be raised, and the capacity of that reservoir doubled at a comparatively small cost.

The foundation of the dam was built with that in view. With the limited amount of runoff from its watershed it was economically inadvisable to build it higher. With the vast storage possibilities of the Hetch Hetchy and Calaveras Valley this lake twice its size could be perpetually filled with several years' supply of water close to this city.

In 1915 another attempt was made by Mayor Rolph and the supervisors to purchase the Spring Valley. In a circular prepared by City Engineer O'Shaughnessy for election purposes it states:

"The offer of the Spring Valley Water Company made on February 1, 1915, at the solicitation of the Board of Supervisors in compromise and settlement of years of litigation, provides that for $34,500,000 and one-half of the $2,000,000 now impounded under water rate suits, the city may purchase all of the properties and works of the present water supply, which will be useful as a complete water system for the city. The remaining one-half of the impounded moneys to be returned to the rate-payers.

The land areas the city proposes to acquire are as follows:

In San Francisco County	907 acres
In San Mateo County	24,773 acres
In Alameda County	29,220 acres
In Santa Clara County	13,403 acres
Total	68,303 acres

This total acreage is three times as great as the entire land area of the City and County of San Francisco."

At the election in 1910 the Spring Valley had agreed to sell out its entire holdings for $35,000,000. In the 1915 arrangement City Engineer O'Shaughnessy had excluded lands in every county not used or useful in his estimation for the future needs of the city, thus reducing the price. Large purchases of lands had been made by the company since 1910. Improvements had been made and land values had risen.

While P. H. McCarthy accomplished the defeat of Spring Valley purchase on the occasion of its first submission to a vote of the people in 1910, he afterwards recommended it. Another group fought it in 1915.

A circular signed by Rudolph Spreckels was sent to every voter. It contained such statements as:

"No friend of the Hetch Hetchy supply will vote for the purchase of Spring Valley. Hetch Hetchy will be given its death blow if the purchase goes through. . . .

> We must choose between Spring Valley and Hetch Hetchy. We cannot have both. . . .
>
> Another serious feature of the exhaustion of our bond limit will be the impossibility of the city to construct lines and a distributing system to bring 200,000 horsepower electric current to San Francisco . . . sufficient to light the city homes and stores, run our street railways . . . and give us a smokeless city.
>
> The Spring Valley is an old, inadequate, patchwork system. . . .
>
> As Lake Merced belongs to the government, Spring Valley cannot fill it up, and it will always remain available for emergency use, without being paid for by the city."

A. J. Gallagher, a supervisor at that time, took the stump against the purchase. He was given publicity by the San Francisco "Chronicle," which also assisted in the defeat of the issue.

The election was held on April 20, 1915. Under the law it takes a two-thirds vote to carry a bond issue. The arguments put out against the proposal were sufficient to cause a considerable section of electors to either vote against the purchase or stay away from the polls. The result was:

For Purchase, 39,951 Against Purchase, 33,455

While a majority of the votes were favorable it lacked the necessary two-thirds.

It will be seen that the total number of votes was 73,406 out of a registered vote of considerably over 100,000.

Six years later another effort was made.

This time the price was $37,000,000 for 61,735 acres distributed in the neighboring counties in about the same proportion as in the preceding election.

The State Railroad Commission had been asked to evaluate the properties and fix the price in order to try and satisfy the people. After its investigation it found the property desired by the city to be worth the amount stated.

In a circular issued by the municipal administration at that time it said that in addition to the lands—

> "The city acquires the entire producing and distributing system which it needs not only for the water demands of its immediate future, but also as an essential part of the great Hetch Hetchy development. This system includes the four peninsula lakes—Crystal Springs, San Andreas, Pilarcitos and Merced . . . the underground storage at Pleasanton and Sunol, the Calaveras reservoir and the San Antonio reservoir site which is on the direct line of the Hetch Hetchy aqueduct.
>
> Also, 18 distributing reservoirs and tanks; 13 pumping stations; 727 miles of transmission pipes; 73,000 services and valuable water rights and many other properties."

Four mayors of San Francisco endorsed the purchase. They were James D. Phelan, Edward Robeson Taylor, P. H. McCarthy and James Rolph, Jr.

Rudolph Spreckels again fought the purchase with about the same line of arguments as in 1915. The press of the city generally supported it or remained passive. The election again failed. It was held on March 8, 1921, and the vote was:

For Purchase, 43,073 Against Purchase, 30,992

There was hardly a thousand votes difference in the two elections held six years apart. Women had swelled the registration to nearly double what it had been in former years. But an apathetic attitude on the part of the voters brought out barely a 50% vote.

Following this election an effort was made to hold the price of the properties at $37,000,000, until the city could have another opportunity to vote on the acquisition of the properties.

The State Railroad Commission in a formal order in case No. 842 said:

> "It is the view of the Commission that the Spring Valley Water Company should hold itself in readiness . . . to sell to the city

> the properties included in its offer of January 14, 1921, at a price which shall not exceed the price heretofore fixed by the Railroad Commission, increased only by the amount of actual expenditures made by the company for capital purposes."

As a result of this the Board of Directors of the Spring Valley Water Company gave the city a ten-year option, expiring on December 31, 1931, in which to purchase its system for $37,000,000. (This figure was increased to $38,000,000 by expenditures that had been made before the agreement was finally entered into.)

The Calaveras Valley in Alameda County has always been looked upon as one of the Spring Valley Company's most valuable assets. It has greater storage possibilities than all of its other reservoirs combined. It is 700 feet above sea level. By bringing a conduit around the southern end of the Bay at an easy gradient, water can be brought to all but the highest levels of the city by gravity, thus avoiding the heavy expense of pumping. It was estimated that it would cost the Spring Valley approximately $12,000,000 to do this.

This high line conduit, however, City Engineer O'Shaughnessy pointed out could not be used for Hetch Hetchy water. For Hetch Hetchy water coming in at a much lower level would not flow into it. If the city were to purchase the Spring Valley system this large additional expense would have to be added to the price of $38,000,000.

It was decided, therefore, by the municipal officials that the City should build a section of its Hetch Hetchy conduit from Irvington in Alameda County to the Crystal Springs Lakes in San Mateo County at an estimated cost of $5,000,000, to be rented to the Spring Valley Company.

The Railroad Commission favored this plan and inserted in its order of August, 1921—

> "We will require accordingly that the Spring Valley Water Company make such increase in its Calaveras system as will pro-

> duce not less than 24,000,000 gallons of water daily in addition to the present available supply. The Company shall further hold itself in readiness to utilize the conduit and pumping facilities which the City and County of San Francisco contemplates constructing upon such terms as will afford a fair return to the City upon its investment and will not unduly burden the Water Company and its consumers. It seems certain that under this plan, the waters of the Spring Valley Water Company can be transmitted by means of the City's facilities for at least ten years to come. The period of use may well extend beyond this time, depending upon the current needs of the community for additional water and the program of construction of the Hetch Hetchy project. We believe that under the terms of the order herein, the investment to be made by the Company and the City will receive adequate protection."

The company on its part agreed to complete the Calaveras Dam and bring this additional supply of water into San Francisco through the city's Hetch Hetchy conduit and to pay the city 5% annually on the cost of the work up to $5,000,000. This would give the city approximately $250,000 a year rental on this part of the Hetch Hetchy system, completed in advance of its need for Hetch Hetchy water. A formal agreement was entered into on April 17, 1922, between the city and the company to this end.

Two other factors had to be considered before this arrangement was finally completed.

There was a gap of about two miles between the Spring Valley system at Niles and where the Hetch Hetchy conduit was to be built near Irvington. To bring the water and connect it with the Hetch Hetchy conduit from the Sunol dam would cost the company approximately $500,000.

The city officials also demanded that the company begin paying interest on the money as soon as the city began construction work on the Hetch Hetchy conduit. It was estimated that the Spring Valley Company would

have to pay about $300,000 in interest charges before it would be able to make any use of the work being done.

In order to make the financing of the Calaveras dam, the Sunol to Irvington conduit and other large, capital expenditures possible without adding them to the $38,000,000 figure the water company was allowed a 20% increase in its rates. Out of this revenue an amortization fund was to be established and in the event the city exercises its option prior to January 1, 1934, all these improvements are to come to the city without added cost. On the other hand the Commission's order says:

> "In the event that said properties of the Spring Valley Water Company shall not have been purchased by the City and County of San Francisco prior to the first day of January, 1934, the said amortization fund shall thereafter remain the property of the Spring Valley Water Company."

After considerable negotiation the Company said:

> "The Company is in no way obligated under the specific provisions of the Commission's decision to assume these liabilities, yet it feels obligated to approach the problem from the spirit of larger cooperation upon which the decision of the Commission was based. The water supply of the City is at stake; therefore the future of the Company as well as of the City."

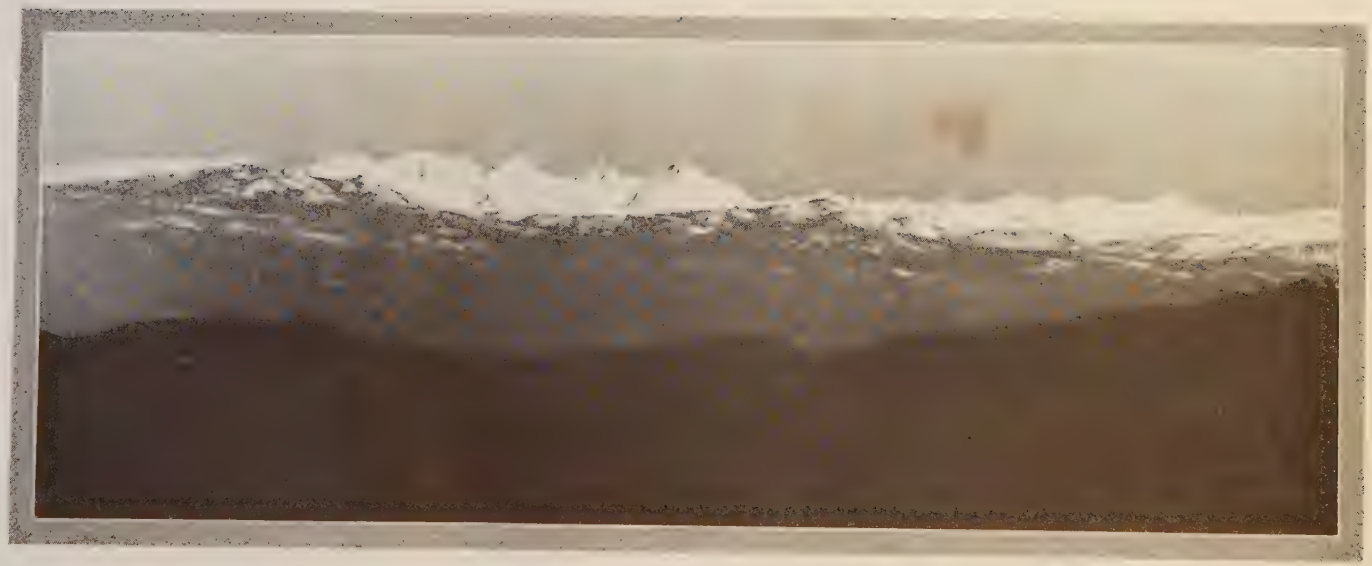
The company had finally yielded to the representations of the city and agreed to assume the costs of the Niles-Irvington pipe-line and pay interest on the money spent during the time of construction of the city's conduit. It was agreed therefore to continue the life of the option for twelve instead of ten years, which expires December 31, 1933.

The Railroad Commission thus brought about a common ground of understanding between the city and the company. It assured adequate development and ample additional water supply for at least twelve years to come. With confidence and trust in the upbuilding of San Francisco's water sup-

ply through a full spirit of cooperation and understanding between the city and the company.

The economic value of the location of the Calaveras dam at a 700-foot elevation, of course, is lost by this arrangement. Its waters are allowed to come down the natural stream bed to an elevation where it will flow into the Hetch Hetchy conduit at about the same pressure as the Hetch Hetchy water will be under. The work on this structure is now completed. The San Mateo lakes are being replenished, and the city's water supply protected by this means.

The question might be asked why Hetch Hetchy water, coming from the high Sierras, could not be made to flow into the city at any height. The answer is that to construct over 100 miles of pipe of the thickness to withstand the pressure would add enormously to the cost. It would also be dangerous, it is said, to attempt transporting water this long distance under such a pressure.



Sierra snow fields, of which there are hundreds of square miles tributary to the Tuolumne River. They are vast reservoirs of potential energy. This photograph is reproduced through the courtesy of R. G. Aitken, Associate Director of Lick Observatory. It was taken by Astronomer W. H. Wright, on Mt. Hamilton, 158 miles distant from the snow capped peaks.

PLATE XX.

CONCLUSION

VAST SNOWFIELDS ARE RESERVOIRS. They are the rains packed away in frozen state to be liberated at a later season. There are 459 square miles of snowfields behind the Hetch Hetchy Valley tributary to the Tuolumne River which flows through it.*

Bret Harte roamed these regions. His headquarters at one time were at Groveland less than thirty miles from the Hetch Hetchy. In the mining camps along the Mother Lode were laid the scenes of "Luck of Roaring Camp," "Tales of the Argonauts" and shorter stories. In "Gabriel Conroy" he describes these vast fields of potential energy as follows:

> "Snow. Everywhere. As far as the eye could reach—fifty miles looking southward from the highest white peak,—filling ravines and gulches, and dropping from the walls of canyons in white shroud-like drifts, fashioning the dividing ridge into the likeness of a monstrous grave . . . and undulating in motionless white billows to the edge of the distant horizon. Snow lying everywhere over the California Sierras on the 15th day of March, 1848, and still falling. . . . The silence was vast, measureless, complete! . . . Above, there was no play of light and shadow, only the occasional deepening of storm or night."

As summer advances and the sun shines hotly on these fields they begin

*Freeman Report, p. 24.

to release their energy. Water, first in trickles, then in larger streams comes cascading down the ravines. Bare granite spots begin to appear as the snows melt away. And far away down in the gorge of the Tuolumne the river begins to swell and roar its hoarse warning of the impending flood.

At this season the Hetch Hetchy used to become a lake. Through the narrow outlet at its lower end the river turned white with foam in the stress and energy of its flight towards the sea. By May and June every stream heading in these mountains is bank full. Devastating floods result in the valleys through which they flow.

With an increasing demand for water and spurred somewhat by the activities of the municipality in its Hetch Hetchy development, the irrigationists began the construction of a huge reservoir lower down on the Tuolumne. They built what is known as the Don Pedro dam about fifty miles from Modesto and created a lake there with enormous storage possibilities. The Hetch Hetchy and Don Pedro dams were completed within a month or two of each other in 1923.

Then came the floods from the snowfields higher up. First the Hetch Hetchy reservoir filled to overflowing. The surplus waters rushed down the Tuolumne gorge on their way oceanward until the Don Pedro dam was reached. This huge artificial lake then commenced to fill. Week by week the rise of the waters was watched. One day the announcement was flashed that it was full.

The waters rushed onward. More and more until it was demonstrated that one normal year's run off will readily fill the reservoirs of the city and the irrigationists and that there is an abundance for both. It is not possible to catch and hold an average year's water crop in all the reservoirs combined.

The irrigation districts nevertheless have had a suit pending in San Joaquin County against the City for many years which has never been pressed for trial. Regarding this Searls says:

"There is no reasonable ground for conflict between the City and the districts for many years to come. The water which the City stores is for the most part water which the districts could not store for lack of reservoir sites. . . .

The time may come, however, when the demand for irrigation water in the districts and the demand for domestic supply in the bay cities will reach a point of conflict. If this should come it would be a question of who is the first in right and this answer will depend upon the facts."*

Proceeding along this same line he says that San Francisco has prepared for eventualities should they occur. An exhaustive study and report was made by James H. Dockweiler, consulting engineer, regarding the use of water by the irrigation districts prior to 1912. From 1914 to 1920 inclusive Prof. B. A. Etcheverry of the State Irrigation Department and Thos. H. Means, agricultural engineer, made intensive studies as to the amounts of water actually needed by the irrigation districts. This was followed by a study and report by Charles H. Lee, civil and hydraulic engineer to the East Bay Municipal Utility District. He made his investigation during the year 1924. And Searls then says:

"Realizing that if for any reason it should be impossible to obtain the personal testimony of the engineers who made the investigations proceedings were taken to perpetuate the evidence on which these reports were founded. Depositions are now on file in the Superior Court of Stanislaus County and available for use at any time. . . .

A bibliography and list of engineers who have been more or less familiar with different details of the project is appended as an aid to preparation of a case should necessity arise. It is to be sincerely hoped that necessity for such use will never exist, that the facts themselves when accurately gathered and considered, as I believe they have been, will enable right thinking men to get together in

*S. F. Rights on Tuolumne River, p. 3-6.

a friendly solution of all problems which present themselves."*

During the very dry year of 1924, the Don Pedro reservoir had been drawn upon so heavily by the irrigationists that they appealed to the City of San Francisco for additional water. Hetch Hetchy reservoir was full. At the same time the normal flow of the river was being liberated for the use of the irrigationists, according to their prior rights. The city thereupon agreed to sell them 150,000 acre feet of stored flood waters for which it received approximately $100,000.

(When astronomers tired of writing rows of ciphers after some figures to indicate vast distances in miles they invented the term of light years. When irrigation engineers, in the same manner, wished to abbreviate the number of figures necessary to indicate large quantities of water in gallons they created the term of acre feet. An acre foot of water being the area of one acre flooded to the depth of one foot and containing 325,828.8 gallons.)

Yet but a year later both reservoirs had been again replenished. The following notice appeared June 12, 1925:

> "Despite the great dams and reservoirs of Don Pedro and Hetch Hetchy and the Foothill reservoirs of the Modesto and Turlock Districts there has already gone to waste this year down the Tuolumne River 665,000 acre feet, or two and one-half times the total capacity of the Don Pedro reservoir."†

The conservation of this enormous runoff has become a California problem. The needs of municipalities, power companies and irrigationists are becoming more acute each year. Possible storage basins and available water sources began to be investigated many years ago.

The beneficial use of this water spells the difference between arid and desert California, as found by the early Spanish settlers, and the California —the land of sunshine, fruit and flowers—of today.

*S. F. Rights on Tuolumne River, p. 3-6.
†Modesto News Herald.

Letting the imagination run backward to that early period, California was indeed an inhospitable region. Much of the interior was covered with vast swamps and tule growth. The grizzly bear, the elk, deer and smaller varieties of game roamed the hills, while the Indians eked out their existence by living off the game and making bread from the acorns.

There was not a hoof of stock, a fruit tree, vine nor vegetable in the vast Pacific slope. This was the California found by Fray Junipero Serra when he established the Missions at San Diego, Los Angeles and along the coast to as far north as Sonoma.

General Juan Bautista de Anza, was the first Spaniard to visit the early Mission, by an overland route from Sonora, Mexico, by the way of Rios Gila and Colorado in 1774. On reaching San Gabriel, on the eve of his departure on his way home, he says: "Were food abundant the conversion to Christianity would be greatly increased. The scarcity of food among the Missions was due more to the lack of seed than any sterility of soil."*

The storage and use of water has transformed the country since the days of Anza from a sterile and barren land to one of the garner houses of the world. In keeping with which is the following:

> "California's later development has been in exact proportion to the amount of water available. The Spaniards needed thousands of acres for their cattle ranges. The early wheat farmer needed thousands of acres for the growing of grain. These immense acreages little by little had to give way to the smaller farmer until the irrigation districts of today point to the intensive farming of the future as water is made available."†

Turning from this view of the past to the future, two major problems confront the citizen before the Hetch Hetchy water can finally find its way to the householder. These are:

1.—To finance the building of a pipe-line across the San Joaquin Valley

*Zoeth S. Eldridge, Beginnings of S. F.

†Bulletin No. 4, Water Resources of Calif.

and tunnels through the Sierra foothills and coast range so that the water may be brought to San Francisco. It is estimated that this will cost $33,000,000. Of this amount $10,000,000 has been voted by the people but as yet unexpended.

2.—Bonds to the extent of $38,000,000 will have to be voted for the purchase of the Spring Valley system before 1934 when the present option expires.

Unless this is done Hetch Hetchy water will only be available through the Spring Valley system. In the same manner that Hetch Hetchy power is now only available through the distributing system of the Pacific Gas and Electric system.

It will be seen that San Francisco must raise $23,000,000 more for the completion of the pipe lines and tunnels and $38,000,000 for the Spring Valley distributing system, or a total of $61,000,000, before she will be able to supply Hetch Hetchy water to the citizens through her own distributing system.

Mayor Rolph, in his speech to the new Board of Supervisors, on January 4, 1926, said:

> "The Spring Valley distributing system must be acquired or the city must construct a competitive system at a stupendous cost. There must be no delay. When Hetchy water arrives we must be ready to distribute it. The purchase of the Spring Valley properties will add no burden to the taxpayer; on the contrary, the revenue from this source not only should pay the interest on the purchase price but also should contribute largely to paying the price of purchase itself."

Regarding the disposition of her electric energy the situation that confronts the city is this: The supervisors have entered into a temporary contract with the Pacific Gas and Electric Company for the distribution of the power for which the city is now receiving approximately $2,000,000 annually.

In the meantime, evaluation proceedings are in progress before the State Railroad Commission to determine the value of the systems of the Pacific Gas and Electric Company and Great Western Power Company with a view to the purchase of one or both of them by the city through condemnation. The Board of Supervisors is on record that a bond issue will be called and the question of either purchasing a distributing system or building one of its own will be submitted to the people at the earliest possible date.

In this connection Mayor Rolph in the same speech said:

> "During the last year the Moccasin power house began to function. There has been deposited in the treasury some $800,000 from this source to help lighten the burden of the taxpayer.
>
> Evaluation proceedings looking toward the acquisition of either or both of the existing local electrical distributing systems should be completed shortly. Thereafter the people of San Francisco must determine whether they will issue bonds to acquire a distributing system by purchase or construction."

According to City Engineer O'Shaughnessy the water from Hetch Hetchy will be needed in San Francisco by the time the tunnels and pipe lines are built. This will take from six to eight years. As has been pointed out if the Spring Valley Water system is to be purchased it will need $61,000,000.

Whether the citizens will allow the present arrangement with the Pacific Gas and Electric Company to continue until the water can be made available, or go into the business of distributing its electric energy first and allow the water question to wait will be the question for the consideration of the people when the proposed bond issue is before them. Estimated roughly to do all three things confronting her will cost the city between $80,000,000 and $100,000,000.

CITY'S RIGHT TO HETCH HETCHY

Such title as San Francisco obtained from the Federal Government to rights in the Hetch Hetchy Valley, at Lake Eleanor, and rights of way through the Yosemite National Park and the Stanislaus National Forest are contained in the following Act of Congress. It is commonly known as the Raker Act. It is reproduced line for line as it finally went to the President for his signature, and was approved by Woodrow Wilson on December 19, 1913.

63D CONGRESS, 1ST SESSION. **H. R. 7207.**

IN THE SENATE OF THE UNITED STATES.

SEPTEMBER 4, 1913.

Read twice and referred to the Committee on Public Lands.

AN ACT

Granting to the city and county of San Francisco certain rights of way in, over, and through certain public lands, the Yosemite National Park, and Stanislaus National Forest, and certain lands in the Yosemite National Park, the Stanislaus National Forest, and the public lands in the State of California, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is hereby granted to the city and county of San Francisco, a municipal corporation in the State of California, all necessary rights of way along such locations and of such width, not to exceed two hundred and fifty feet, as in the judgment of the Secretary of the Interior may be required for the purposes of this Act, in, over, and through the public lands of the United States in the counties of Tuolumne, Stanislaus, San Joaquin, and Alameda, in the State of California, and in, over, and through the Yosemite National Park

PLATE XXI—*About one-half photographic reproduction of the original first page.*

THE RAKER ACT

63D CONGRESS, 1ST SESSION. H. R. 7207.

IN THE SENATE OF THE UNITED STATES

SEPTEMBER 4, 1913.

Read twice and referred to the Committee on Public Lands.

AN ACT

Granting to the city and county of San Francisco certain rights of way in, over, and through certain public lands, the Yosemite National Park, and Stanislaus National Forest, and certain lands in the Yosemite National Park, the Stanislaus National Forest, and the public lands in the State of California, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is hereby granted to the city and county of San Francisco, a municipal corporation in the State of California, all necessary rights of way along such locations and of such width, not to exceed two hundred and fifty feet, as in the judgment of the Secretary of the Interior may be required for the purposes of this Act, in, over, and through the public lands of the United States in the counties of Tuolumne, Stanislaus, San Joaquin, and Alameda, in the State of California, and in, over, and through the Yosemite National Park and the Stanislaus National Forest, or portions thereof, lying within the said counties, for the purpose of constructing, operating, and maintaining aqueducts, canals, ditches, pipes, pipe lines, flumes, tunnels, and conduits for conveying water for domestic purposes and uses to the city and county of San Francisco and such other municipalities and water districts as, with the consent of the city and county of San Francisco, or in accordance with the laws of the State of California in force at the time application is made, may hereafter participate in the beneficial use of the rights and privileges granted by this Act; for the purpose of constructing, operating, and maintaining power and electric plants, poles, and lines for generation and sale and distribution of electric energy; also for the purpose of constructing, operating, and maintaining telephone and telegraph lines, and for the purpose of constructing, operating, and maintaining roads, trails, bridges, tramways, railroads, and other means of locomotion, transportation, and communication, such as may be necessary or proper in the construction, maintenance, and operation of the works constructed by the grantee herein; together with such lands in the Hetch Hetchy Valley and Lake Eleanor Basin within the Yosemite National Park, and the Cherry Valley within the Stanislaus National Forest, irrespective of the width or extent of said lands, as may be determined by the Secretary of the Interior to be actually necessary for surface or underground reservoirs, diverting and storage dams; together with such lands as the Secretary of the Interior may determine to be actually necessary for power houses, and all other structures or buildings necessary or properly incident to the construction, operation, and maintenance of said water-power and electric plants, telephone and telegraph lines, and such means of locomotion, transportation, and communication as may be established; together with the right to take, free of cost, from the public lands, the Yosemite National Park, and the Stanislaus National Forest adjacent to its right of way, within such distance as the Secretary of the Interior and the Secretary of Agriculture may determine, stone, earth, gravel, sand, tufa, and other materials of like character actually necessary to be used in the construction, operation, and repair of its said water-power and electric plants, its said telephone and telegraph lines, and its said means of locomotion, transportation, or communication, under such conditions and regulations as may be fixed by the Secretary of the Interior and the Secretary of Agriculture, within their respective jurisdictions, for the protection of the public lands, the Yosemite National Park, and the Stanislaus National Forest: *Provided*, That said grantee shall file, as hereinafter provided, a map or maps showing the boundaries, location, and extent of said proposed rights of way and lands for the purposes hereinabove set forth: *Provided further*, That the Secretary of the Interior shall approve no location or change of location in the national forests unless said location or change of location shall have been approved in writing by the Secretary of Agriculture.

SEC. 2. That within three years after the passage of this Act said grantee shall file with the registers of the United States land offices, in the districts where said rights of way or lands are located, a map or maps showing the boundaries, locations, and extent of said proposed rights of way and lands required for the purposes stated in section one of this Act; but no permanent construction work shall be commenced on said land until such map or maps shall have been filed as herein provided and approved by the Secretary of the Interior: *Provided, however*, That any changes of location or any of said rights of way or lands may be made by said grantee before the final completion of any of said work permitted in section one hereof, by filing such additional map or maps as may be necessary to show such changes of location, said additional map or maps to be filed in the same manner as the original map or maps; but no change of location shall become valid until approved by the Secretary of the Interior,

and the approval of the Secretary of the Interior of said map or maps showing changes of location of said rights of way or lands shall operate as an abandonment by the city and county of San Francisco to the extent of such change or changes of any of the rights of way or lands indicated on the original maps: *And provided further*, That any rights inuring to the grantee under this Act shall, on the approval of the map or maps referred to herein by the Secretary of the Interior, relate back to the date of the filing of said map or maps with the register of the United States Land Office as provided herein, or to the date of the filing of such maps as they may be copies of as provided for herein: *And provided further*, That with reference to any map or maps heretofore filed by said city and county of San Francisco or its grantor with any officer of the Department of the Interior or the Department of Agriculture, and approved by said department, the provisions hereof will be considered complied with by the filing by said grantee of copies of any of such map or maps with the register of the United States Land Office as provided for herein, which said map or maps and locations shall as in all other cases be subject to the approval of the Secretary of the Interior.

SEC. 3. That the rights of way hereby granted shall not be effective over any lands upon which homestead, mining,

or other existing valid claim or claims shall have been filed or made and which now in law constitute prior rights to any claim of the grantee until said grantee shall have purchased such portion or portions of such homestead, mining, or other existing valid claims as it may require for right-of-way purposes and other purposes herein set forth, and shall have procured proper relinquishments of such portion or portions of such claims, or acquired title by due process of law and just compensation paid to said entrymen or claimants, and caused proper evidence of such fact to be filed with the Commissioner of the General Land Office, and the right of such entrymen or claimants to sell and of said grantee to purchase such portion or portions of such claims are hereby granted: *Provided, however*, That this Act shall not apply to any lands embraced in rights of way heretofore approved under any Act of Congress for the benefit of any parties other than said grantee or its predecessors in interest.

Sec. 4. That the said grantee shall conform to all regulations adopted and prescribed by the Secretary of the Interior governing the Yosemite National Park and by the Secretary of Agriculture governing the Stanislaus National Forest, and shall not take, cut, or destroy any timber within the Yosemite National Park or the Stanislaus National Forest, except such as may be actually necessary in order to

construct, repair, and operate its said reservoirs, dams, power plants, water-power and electric works, and other structures above mentioned, but no timber shall be cut or removed from lands outside of the right of way until designated by the Secretary of the Interior or the Secretary of Agriculture, respectively; and it shall pay to the United States the full value of all timber and wood cut, injured, or destroyed on or adjacent to any of the rights of way and lands, as required by the Secretary of the Interior or the Secretary of Agriculture: *Provided*, That no timber shall be cut by the grantee in the Yosemite National Park except from land to be submerged or which constitutes an actual obstruction to the right or rights of way or to any road or trail provided in this Act: *Provided further*, That for and in consideration of the rights and privileges hereby granted to it the said grantee shall construct and maintain in good repair such bridges or other practicable crossings over its rights of way within the Stanislaus National Forest as may be prescribed in writing by the Secretary of Agriculture, and elsewhere on public lands along the line of said works, and within the Yosemite National Park as may be prescribed in writing by the Secretary of the Interior; and said grantee shall, as said waterworks are completed, if directed in writing by the Secretary of the Interior or the Secretary of Agriculture, construct and maintain along each

side of said right of way a lawful fence of such character as may be prescribed by the proper Secretary, with such suitable lanes or crossings as the aforesaid officers shall prescribe: *And provided further*, That the said grantee shall clear its rights of way within the Yosemite National Park and the Stanislaus National Forest and over any public land of any debris or inflammable material as directed by the Secretary of the Interior and the Secretary of Agriculture, respectively; and said grantee shall permit any road or trail which it may construct over the public lands, the Yosemite National Park, or the Stanislaus National Forest to be freely used by the officials of the Government and by the public, and shall permit officials of the Government, for official business only, the free use of any telephone or telegraph lines, or equipment, or railroads that it may construct and maintain within the Yosemite National Park and the Stanislaus National Forest, or on the public lands, together with the right to connect with any such telephone or telegraph lines private telephone wires for the exclusive use of said Government officials: *And provided further*, That all reservoirs, dams, conduits, power plants, water power and electric works, bridges, fences, and other structures not of a temporary character shall be sightly and of suitable exterior design and finish so as to harmonize with the surrounding landscape and its use as a park; and for this purpose all plans and designs

shall be submitted for approval to the Secretary of the Interior.

SEC. 5. That all lands over which the rights of way mentioned in this Act shall pass shall be disposed of only subject to such easements: *Provided, however*, That the construction of the aforesaid works shall be prosecuted diligently, and no cessation of such construction shall continue for a period of three consecutive years, and in the event that the Secretary of the Interior shall find and determine that there has not been diligent prosecution of the work or of some integral and essential part thereof, or that there has been a cessation of such construction for a period of three consecutive years, then he may declare forfeited all rights of the grantee herein as to that part of the works not constructed, and request the Attorney General, on behalf of the United States, to commence suit in the United States District Court for the Northern District of California for the purpose of procuring a judgment declaring all such rights to that part of the works not constructed to be forfeited to the United States, and upon such request it shall be the duty of the said Attorney General to cause to be commenced and prosecuted to a final judgment such suit: *Provided further*, That the Secretary of the Interior shall make no such finding and take no such action if he shall find that the construction or progress of the works has been delayed or prevented by the act of God or the

public enemy, or by engineering or other difficulties that could not have been reasonably foreseen and overcome, or by other special or peculiar difficulties beyond the control of the said grantee: *Provided further*, That, in the exercise of the rights granted by this Act, the grantee shall at all times comply with the regulations herein authorized, and in the event of any material departure therefrom the Secretary of the Interior or the Secretary of Agriculture, respectively, may take such action as may be necessary in the courts or otherwise to enforce such regulations.

SEC. 6. That the grantee is prohibited from ever selling or letting to any corporation or individual, except a municipality or a municipal water district or irrigation district, the right to sell or sublet the water or the electric energy sold or given to it or him by the said grantee: *Provided*, That the rights hereby granted shall not be sold, assigned, or transferred to any private person, corporation, or association, and in case of any attempt to so sell, assign, transfer, or convey, this grant shall revert to the Government of the United States.

SEC. 7. That for and in consideration of the grant by the United States as provided for in this Act the said grantee shall assign, free of cost to the United States, all roads and trails built under the provisions hereof; and further, after the expiration of five years from the passage of this Act the grantee shall pay to the

United States the sum of $15,000 annually for a period of ten years, beginning with the expiration of the five-year period before mentioned, and for the next ten years following $20,000 annually, and for the remainder of the term of the grant shall, unless in the discretion of Congress the annual charge should be increased or diminished, pay the sum of $30,000 annually, said sums to be paid on the first day of July of each year. Until otherwise provided by Congress, said sums shall be kept in a separate fund by the United States, to be applied to the building and maintenance of roads and trails and other improvements in the Yosemite National Park and other national parks in the State of California. The Secretary of the Interior shall designate the uses to be made of sums paid under the provisions of this section under the conditions specified herein.

SEC. 8. That the word "grantee" as used herein shall be understood as meaning the city and county of San Francisco and such other municipalities or water district or water districts as may, with the consent of the city and county of San Francisco or in accordance with the laws of the State of California, hereafter participate in or succeed to the beneficial rights and privileges granted by this Act.

SEC. 9. That this grant is made to the said grantee subject to the observance on the part of the grantee of all the conditions hereinbefore and hereinafter enumerated:

(a) That upon the completion of the Hetch Hetchy Dam or the Lake Eleanor Dam, in the Yosemite National Park, by the grantee, as herein specified, and upon the commencement of the use of any reservoirs thereby created by said grantee as a source of water supply for said grantee, the following sanitary regulations shall be made effective within the watershed above and around said reservoir sites so used by said grantee:

First. No human excrement, garbage, or other refuse shall be placed in the waters of any reservoir or stream or within three hundred feet thereof.

Second. All sewage from permanent camps and hotels within the watershed shall be filtered by natural percolation through porous earth or otherwise adequately purified or destroyed.

Third. No person shall bathe, wash clothes or cooking utensils, or water stock in, or in any way pollute, the water within the limits of the Hetch Hetchy Reservoir or any reservoir constructed by the said grantee under the provisions of this grant, or in the streams leading thereto, within one mile of said reservoir; or, with reference to the Hetch Hetchy Reservoir, in the waters from the reservoir or waters entering the river between it and the "Early intake" of the aqueduct, pending the completion of the aqueduct between "Early intake" and the Hetch Hetchy Dam site.

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Fourth. The cost of the inspection necessary to secure compliance with the sanitary regulations made a part of these conditions, which inspection shall be under the direction of the Secretary of the Interior, shall be defrayed by the said grantee.

Fifth. If at any time the sanitary regulations provided for herein shall be deemed by said grantee insufficient to protect the purity of the water supply, then the said grantee shall install a filtration plant or provide other means to guard the purity of the water. No other sanitary rules or restrictions shall be demanded by or granted to the said grantee as to the use of the watershed by campers, tourists, or the occupants of hotels and cottages.

(b) That the said grantee shall recognize the prior rights of the Modesto Irrigation District and the Turlock Irrigation District as now constituted under the laws of the State of California, or as said districts may be hereafter enlarged to contain in the aggregate not to exceed three hundred thousand acres of land, to receive two thousand three hundred and fifty second-feet of the natural daily flow of the Tuolumne River, measured at the La Grange Dam, whenever the same can be beneficially used by said irrigation districts, and that the grantee shall never interfere with said rights.

(c) That whenever said irrigation districts receive at the La Grange Dam less than two thousand three hundred

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and fifty second-feet of water, and when it is necessary for their beneficial use to receive more water the said grantee shall release free of charge, out of the natural daily flow of the streams which it has intercepted, so much water as may be necessary for the beneficial use of said irrigation districts not exceeding an amount which, with the waters of the Tuolumne and its tributaries, will cause a flow at La Grange Dam of two thousand three hundred and fifty second-feet; and shall also recognize the rights of the said irrigation districts to the extent of four thousand second-feet of water out of the natural daily flow of the Tuolumne River for combined direct use and collection into storage reservoirs as may be provided by said irrigation districts, during the period of sixty days immediately following and including April fifteenth of each year, and shall during such period release free of charge such quantity of water as may be necessary to secure to the said irrigation districts such four thousand second-feet flow or portion thereof as the said irrigation districts are capable of beneficially directly using and storing below Jawbone Creek: *Provided, however,* That at such times as the aggregate daily natural flow of the watershed of the Tuolumne and its tributaries measured at the La Grange Dam shall be less than said districts can beneficially use and less than two thousand three hundred and fifty second-feet, then and in that event the said grantee

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shall release, free of charge, the entire natural daily flow of the streams which it has under this grant intercepted.

(d) That the said grantee whenever the said irrigation districts desire water in excess of that to which they are entitled under the foregoing, shall on the written demand of the said irrigation districts sell to the said irrigation districts from the reservoir or reservoirs of the said grantee such amounts of stored water as may be needed for the beneficial use of the said irrigation districts at such a price as will return to the grantee the actual total costs of providing such stored water, such costs to be computed in accordance with the currently accepted practice of public cost accounting as may be determined by the Secretary of the Interior, including, however, a fair proportion of the cost to said grantee of the conduit, lands, dams, and water-supply system included in the Hetch Hetchy and Lake Eleanor sites; upon the express condition, however, that the said grantee may require the said irrigation districts to purchase and pay for a minimum quantity of such stored water, and that the said grantee shall be entitled to receive compensation for a minimum quantity of stored water and shall not be required to sell and deliver to the said irrigation districts more than a maximum quantity of such stored water to be released during any calendar year: *Provided, however,* That if the said irrigation districts shall develop sufficient water to meet their own needs for beneficial use and

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shall so notify in writing the Secretary of the Interior, the said grantee shall not be required to sell or deliver to said irrigation districts the maximum or minimum amount of stored waters hereinbefore provided for, and shall release the said districts from the obligation to pay for such stored water: *And provided further,* That said grantee shall without cost to said irrigation districts return to the Tuolumne River above the La Grange Dam for the use of the said irrigation districts all surplus or waste water resulting from the development of hydroelectric energy generated by the said grantee.

(e) That such minimum and maximum amounts of such stored water to be so released during any calendar year as hereinbefore provided and the price to be paid therefor by the said irrigation districts are to be determined and fixed by the Secretary of the Interior in accordance with the provisions of the preceding paragraph.

(f) That the Secretary of the Interior shall revise the maximum and minimum amounts of stored water to be supplied to said irrigation districts by said grantee as hereinbefore provided, whenever the said irrigation districts have properly developed the facilities of the Davis Reservoir of the Turlock Irrigation District and the Warner-Dallas Reservoir of the Modesto Irrigation District to the fullest practicable extent up to a development not exceeding in cost $15 per acre-foot storage capacity, and whenever additional storage

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has been provided by the said irrigation districts which is necessary to the economical utilization of the waters of said watershed, and also after water losses and wastes have been reduced to such reasonable minimum as will assure the economical and beneficial use of such water.

(g) That the said grantee shall not be required to furnish more than the said minimum quantity of stored water hereinbefore provided for until the said irrigation districts shall have first drawn upon their own stored water to the fullest practicable extent.

(h) That the said grantee shall not divert beyond the limits of the San Joaquin Valley any more of the waters from the Tuolumne watershed than, together with the waters which it now has or may hereafter acquire, shall be necessary for its beneficial use for domestic and other municipal purposes.

(i) That the said grantee shall, at its own expense, locate and construct, under the direction of the Secretary of the Interior, such weirs or other suitable structures on sites to be granted, if necessary, by the United States, for accurately measuring the flow in the said river at or above La Grange Dam, and measuring the flow into and out from the reservoirs or intakes of said districts, and into and out from any reservoirs constructed by the said grantee, and at any other point on the Tuolumne River or its tributaries, which he may

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designate, and fit the same with water-measuring apparatus satisfactory to said Secretary and keep such hydrographic records as he may direct, such apparatus and records to be open to inspection by any interested party at any time.

(j) That by "the flow," "natural daily flow," "aggregate daily natural flow," and "what is naturally flowing," as are used herein, is meant such flow as on any given day would flow in the Tuolumne River or its tributaries if said grantee had no storage or diversion works on the said Tuolumne watershed.

(k) That when the said grantee begins the development of the Hetch Hetchy Reservoir site, it shall undertake and vigorously prosecute to completion a dam at least two hundred feet high, with a foundation capable of supporting said dam when built to its greatest economic and safe height.

(l) That the said grantee shall, upon request, sell or supply to said irrigation districts, and also to the municipalities within either or both said irrigation districts, for the use of any land owner or owners therein for pumping subsurface water for drainage or irrigation, or for the actual municipal public purposes of said municipalities (which purposes shall not include sale to private persons or corporations) any excess of electrical energy which may be generated, and which may be so beneficially used by said irrigation districts or municipalities, when any such excess

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of electric energy may not be required for pumping the water supply for said grantee and for the actual municipal public purposes of the said grantee (which purposes shall not include sale to private persons or corporations) at such price as will actually reimburse the said grantee for developing and maintaining and transmitting the surplus electrical energy thus sold; and no power plant shall be interposed on the line of the conduit except by the said grantee, or the lessee, as hereinafter provided, and for the purposes and within the limitations in the conditions set forth herein: *Provided*, That said grantee shall satisfy the needs of the landowners in said irrigation districts for pumping subsurface water for drainage or irrigation, and the needs of the municipalities within such irrigation districts for actual municipal public purposes, after which it may dispose of any excess electrical energy for commercial purposes.

(m) That the right of said grantee in the Tuolumne water supply to develop electric power for either municipal or commercial use is to be made conditional for twenty years following the completion of any portion of the works adapted to the generation of electrical energy, as follows: The said grantee shall within three years from the date of completion of said portion of the works install, operate, and maintain apparatus capable of developing and transmitting not less than ten thousand horsepower of electric power for munici-

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pal and commercial use, said ten thousand horsepower to be actually used or offered for use; and within ten years from the completion of said portion of the works not less than twenty thousand horsepower; and within fifteen years therefrom not less than thirty thousand horsepower; and within twenty years therefrom not less than sixty thousand horsepower, unless in the judgment of the Secretary of the Interior the public interest will be satisfied with a lesser development. The said grantee shall develop and use hydroelectric power for the use of its people and shall, at prices to be fixed under the laws of California or, in the absence of such laws, at prices approved by the Secretary of the Interior, sell or supply such power for irrigation, pumping or other beneficial use, said prices not to be less than will return to said grantee the actual total costs of providing and supplying said power, which costs shall be computed in accordance with the currently accepted practice of public cost accounting, as shall be determined by the Secretary of the Interior, including, however, a fair proportion of cost of conduit, lands, dams, and water-supply system; and further, said grantee shall, before using any of said water for the purpose of developing hydroelectric power, file such maps, surveys, field notes, or other data as may be required by law, and shall conform to any law existing and applicable to said

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subject of development of said hydroelectric power for municipal or commercial uses.

(n) That after the period of twenty years hereinbefore provided for the development, transmission, use, and sale of electric power, the Secretary of the Interior, under authorization hereby given, may require the grantee, within a time fixed by the Secretary, to develop, transmit, and use, or offer for sale, such additional power, and also such power less than sixty thousand horsepower as the grantee may have failed to develop, transmit, use, or sell, within the twenty years aforesaid, as in the judgment of said Secretary the grantee may or ought to develop under this grant, and which in his judgment the public interest demands or convenience requires; and in case of the failure of the grantee to carry out any such requirements of the Secretary of the Interior the latter is hereby authorized so to do, and he may, in such manner and form and upon such terms and conditions as he may determine, provide for the development, transmission, use, and sale of such additional power and such power not so developed, transmitted, or used by the grantee at the end of said twenty years up to sixty thousand horsepower; and for that purpose the Secretary of the Interior may take possesssion of and lease to such person or persons as he may designate such portion of the rights of way, structures, dams, conduits, and other property ac-

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quired or constructed by the grantee hereunder as may be necessary for the development, transmission, use, and sale of such power.

(o) That the rate or charges to be made by the grantee or by any lessee under the last preceding paragraph for the use of power for commercial purposes shall at all times conform to the laws of the State of California or, in the absence of any such statutory law, be subject to the approval of the Secretary of the Interior, and in the absence of such law no rates or charges shall be made, fixed, or collected without such approval, and the grantee shall at any time, upon the demand of the Secretary of the Interior, allow the latter or such person or persons as he may designate full and free access, right, and opportunity to examine and inspect all of the grantee's books, records, and accounts, and all the works constructed and property occupied hereunder by the grantee.

(p) That this grant is upon the further condition that the grantee shall construct on the north side of the Hetch Hetchy Reservoir site a scenic road or trail, as the Secretary of the Interior may determine, above and along the proposed lake to such point as may be designated by the said Secretary, and also leading from said scenic road or trail a trail to the Tiltill Valley and to Lake Vernon, and a road or trail to Lake Eleanor and Cherry Valley via McGill Meadow; and

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likewise the said grantee shall build a wagon road from Hamilton or Smiths Station along the most feasible route adjacent to its proposed aqueduct from Groveland to Portulaca or Hog Ranch and into the Hetch Hetchy Dam site, and a road along the southerly slope of Smiths Peak from Hog Ranch past Harden Lake to a junction with the old Tioga Road, in section four, township one south, range twenty-one east, Mount Diablo base and meridian, and such roads and trails made necessary by this grant, and as may be prescribed by the Secretary of the Interior. Said grantee shall have the right to build and maintain such other necessary roads or trails through the public lands, for the construction and operation of its works, subject, however, to the approval of the Secretary of Agriculture in the Stanislaus National Forest, and the Secretary of the Interior in the Yosemite National Park. The said grantee shall further lay and maintain a water pipe, or otherwise provide a good and sufficient supply of water for camp purposes at the Meadow, one-third of a mile, more or less, southeasterly from the Hetch Hetchy Dam site.

That all trail and road building and maintenance by the said grantee in the Yosemite National Park and the Stanislaus National Forest shall be done subject to the direction and approval of the Secretary of the Interior or the Secretary of Agriculture according to their respective jurisdictions.

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(q) That the said grantee shall furnish water at cost to any authorized occupant within one mile of the reservoir and in addition to the sums provided for in section seven it shall reimburse the United States Government for the actual cost of maintenance of the above roads and trails in a condition of repair as good as when constructed.

(r) That in case the Department of the Interior is called upon, by reason of any of the above conditions, to make investigations and decisions respecting the rights, benefits, or obligations specified in this Act, which investigations or decisions involve expense to the said Department of the Interior, then such expense shall be borne by said grantee.

(s) That the grantee shall file with the Secretary of the Interior, within six months after the approval of this Act, its acceptance of the terms and conditions of this grant.

(t) That the grantee herein shall convey to the United States, by proper conveyance, a good and sufficient title free from all liens and encumbrances of any nature whatever, to any and all tracts of land which are now owned by said grantee within the Yosemite National Park or that part of the national forest adjacent thereto not actually required for use under the provisions of this Act, said conveyance to be approved by and filed with the Secretary of the Interior within six months after the said grantee ceases to use such

lands for the purpose of construction or repair under the provisions of this Act.

(u) That the city and county of San Francisco shall sell to the United States, for the use of the War Department, such water as the War Department may elect to take, and shall deliver the same through its system in or near the city of San Francisco to the mains or systems of such military reservations in that vicinity as may be designated by the Secretary of War, under such rules and regulations as he may prescribe. In payment for such water and the delivery thereof the United States shall pay to the said city and county of San Francisco a rental, to be calculated at a fixed rate per one thousand gallons, said rate not to exceed the actual cost of said water to said city and county for all the water so furnished, as determined by meter measurements: *And provided further*, That payment of said rental shall be made by the local disbursing officer of the War Department in the usual manner: *Provided, however*, That the grantee shall at all times comply with and observe on its part all the conditions specified in this Act, and in the event that the same are not reasonably complied with and carried out by the grantee, upon written request of the Secretary of the Interior, it is made the duty of the Attorney General in the name of the United States to commence all necessary

suits or proceedings in the proper court having jurisdiction thereof, for the purpose of enforcing and carrying out the provisions of this Act.

SEC. 10. That this grant, so far as it relates to the said irrigation districts, shall be deemed and held to constitute a binding obligation upon said grantee in favor of the said irrigation districts which said districts, or either of them, may judicially enforce in any court of competent jurisdiction.

SEC. 11. That this Act is a grant upon certain express conditions specifically set forth herein, and nothing herein contained shall be construed as affecting or intending to affect or in any way to interfere with the laws of the State of California relating to the control, appropriation, use, or distribution of water used in irrigation or for municipal or other uses, or any vested right acquired thereunder, and the Secretary of the Interior, in carrying out the provisions of this Act, shall proceed in conformity with the laws of said State.

Passed the House of Representatives September 3, 1913.

Attest: SOUTH TRIMBLE,
Clerk.

Passed the Senate Dec. 2, 1913. Approved by President Woodrow Wilson Dec. 19, 1913.

CONSUMMATION

THREE SCORE YEARS OF EFFORT ON the part of the Citizens of San Francisco to secure possession of the Spring Valley Water Company's properties were finally crowned with success on March 3, 1930, when deeds to the vast water holdings were given Mayor Rolph and other officials in the Rotunda of the City Hall, and President S. P. Eastman of the Spring Valley Water Company was handed a draft for $39,962,606.51 in return.

With President Eastman standing by his side, Mayor Rolph told the audience that he considered the acquisition of the Spring Valley properties the crowning achievement of his long administration as Mayor of San Francisco since 1912.

From the date of retirement of Mayor Thomas A. Selby from office in 1870, when he declared that the supplying of the city with water ought to be a public function, the agitation has continued until for the fifth time the proposal to purchase the private system was submitted to the people at an election held on May 1, 1928 and was carried by the necessary two-thirds vote. The total vote cast was 116,842. Those in favor numbered 82,490. Those against 21,175.

While the bonds were voted in 1928 they could not be sold. A year and a half later A. P. Giannini, for the Bank of Italy, purchased the entire bond issue of $41,000,000.00

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Recognizing the historical value of this publication, President Eastman purchased 300 volumes [Nos. 175 to 475 inclusive] and distributed them to the libraries of the Public Schools and other institutions of the city.

H E R E

ends the book of The Story of Hetch Hetchy, written by Ray W. Taylor and printed in San Francisco, California, in the Spring of Nineteen-twenty-six by Ricardo J. Orozco at his shop, number 507 Montgomery Street, on Mirecourt laid antique handmade paper of which a limited edition of 650 copies was issued, this being No. [illegible] ¶ Credit is gladly given the *unknown* artists, who, in the twilight of the printing age designed the beautiful ornaments which have added so materially to the attractiveness of this book. How far into the remote past they extend no one can say. ¶ As an example: the first headpiece used, depicting a bear holding sprays, with men and dogs, is found in Holinsheds Chronicles, 1579; quite likely copied, at least in part, from a still earlier work; the tailpiece with fountains and mermaids in an edition of the Odes of Horace, 1743. And so on: the Roman initials are of the Sixteenth Century. Monks, in the dimly lighted cells of the old monasteries of France, Italy and Spain, did much of this work in its earlier forms. ¶ Artist E. D. Bills of San Francisco, very skillfully adapted the drawings to meet the requirements of this work. Henry Plover of London and the Graphic Arts Company of Boston, assisted materially through their books on the subject of these ornaments. The Graphic Arts Company of San Francisco made the halftones and line engravings. ¶ The author and printer extend their thanks to Robert Rea, Librarian of the San Francisco Public Library, for innumerable courtesies. The author also wishes to express his thanks to his good engineering friends Hermann Schussler [deceased], Marsden Manson, M. M. O'Shaughnessy and George A. Elliott for a liberal education, extending over a period of years, in water development and the engineering features.